



STUDIA UNIVERSITATIS  
BABEȘ-BOLYAI



# BIOETHICA

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BIOETHICA**

**1-2/2017**

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## **Editorial:**

# **ETHICAL CONCERNS REGARDING CLINICAL EXPERIMENTS ON PATIENTS WHO ARE NOT ABLE TO CONSENT**

**MARIA ALUAS**

In 1985, Dr. Alain Milhaud of Nord Hospital in Amiens had performed an experimental blood transfusion on a patient in a coma, without notifying his family. He withdrew one liter of blood from a man in a coma, then reinjected it into the bloodstream two minutes via a pelvic bone. The experiment was aimed at showing that quick, massive transfusions on patients without an available vein are possible. Milhaud said that the experiment was “willfully provocative”, intended to open debate on the issue of using patients in deep comas as living laboratories. Professor Pierre Huguenard, of Henri-Mondor Hospital in suburban Creteil, calling the experiment at Amiens “wretched” (1). Some doctors supporting experiments on the comatose, and quoted anonymously by *Le Monde*, in 1988, contended that such patients were perfect “biological models” for studies of new drug therapies (1).

Later on, in 1988, the same doctor, A. Milhaud from Amiens, did a forensic expertize, on a patient in vegetative state, injecting Nitrous Oxide, aimed to study the cyanosis phenomena (2). In 1988, dr Mihaud, and other colleagues (H Cavaillet, Maurice Cara, H Laborit, G Lazortes, P Milliez, D Patte) drafted their living will. It was the first living will draft and debated in France. “I hereby declare allowing to be performed on me, by experts in clinical research and physicians, diagnostic tests for general and therapeutic interest... where after an accident I find myself in a chronic vegetative state” (2).

After 8 months, in 1988, France has adopted a law, *Law Huriet-Sérusclat*, on the biomedical research, and this law became a reference in the field of clinical trials.

Ethical Committee Rapport (1987) provides: “Tests without therapeutic finality on incompetents, people in chronic vegetative state and inmates are prohibited”. This legislation from 1988 was revised in 1994, and provides: No

biomedical research can be performed on a brain dead person without his consent expressed directly or by the testimony of his family. (Art. L.209-18-1). Ans Public Health Law Code (2004) states that: “No biomedical research can be performed on a deceased, in a state of brain death, without his/her expressed consent (directly) during his lifetime or by the his/her family”.

### **Ethical Issues on experiments on patients on vegetative state**

1. What are the reasons of these kinds of tests? Why doctors performed these researches on vegetative state patients?

Because they considered the patients in a vegetative state like a ‘living laboratories’, they treated them as objects, not anymore as a human being, subject of rights. The fact that they drafted even their living will say they agree to be used on research show that they really thought that patients in vegetative state are not able anymore to feel pain, to suffering and their life is totally compromised, perfect resources for studies and research.

The question, if patients in a vegetative state are or not person remains. There are always very important ‘struggles’, especially in Italy, every time when a patient in such a condition appear in a public debate. The last very discussed case was in 2009, in Italy, Eluana Englaro case (3). In the last time, after many debates, Catholics sustained that patients in vegetative state are patients with severe disabilities and they are subjects of rights, they must to be treated and cared. The fundament is art. 5 of the UN Convention on the Rights of Persons with Disabilities (2006), which provides ‘equality and non-discrimination’ and “prohibit all discrimination on the basis of disability and guarantee to persons with disabilities equal and effective legal protection against discrimination on all grounds” (4).

2. Does this doctor respect the principles of research ethics?

The Belmont Rapport (1979) on Ethical Principles and Guidelines for the Protection of Human Subjects of Research provides that physicians must to respect these 3 principles:

1. Respect for Persons
2. Beneficence
3. Justice

Dr. Milhaud instead didn’t respect anyone. He treated the patients like objects, not like persons: no informed consent, no information. The experiments weren’t for the good of these patients. And they were discriminate because of their condition, of coma and vegetative state.

3. Why is important for us to reflect about these experiments?

Because there were many changes in the last 50 years in biomedical field, in our cultural thinking, in ethics and rights. Such as:

1. Changes in the rapport doctor and patients, an increased distance between doctor and his patients.
2. Decrease in the respect for science and questioning medical authority, because of many scandals and abuses in the last decades.
3. Mobilization of citizens' movements, which in the name of human rights, denouncing medical abuse.

And now, we must to reconsider the relationship with the science, the research, the medical profession, ethics and rights and to propose solutions in order to avoid abuses and experiments without any respect for people and for humanity.

And the most important thing in this field is that for the good of humanity, doctor must to have confidence in their patients and patients must to trust their doctors.

This new issue of Studia Universitatis Babeş-Bolyai – Bioethica is a mix of topics from different medical research area: dental medicine, medical student's issues, patient's rights, organ transplantations, and ecological economy. All papers present complex issues and approaches related to different area of thinking Ethics. As a conclusion we can say that Ethics is always very challenging and new.

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## ***I. STUDII***



## VERACITY AS A CORE ETHICAL PRINCIPLE IN DENTAL ETHICS

SORIN HOSTIUC<sup>1\*</sup>, MIHAI MARINESCU<sup>1</sup>, IONUȚ NEGOI<sup>1</sup>, PAULA PERLEA<sup>1</sup>

**ABSTRACT.** Veracity (or truth-telling) in healthcare ethics is defined as a comprehensive, accurate, and objective transmission of information, and also as the way the professional augments the understanding of the patient (in clinical/dental practice) or subject (in biomedical research). Veracity, as a moral principle guiding medical (and dental practice) has a long and complicated history; only recently the principle became stable and received a proper definition and differentiation from informed consent. The purposes of this article is to present a short history of veracity in clinical practice, followed by a normative and descriptive analysis of the principle, and finally, to offer some practical applications of the principle in dentistry.

**Keywords:** *veracity; dentistry; normative ethics; amalgams; commercialization.*

**REZUMAT. Veracitatea ca unul din principiile fundamentale ale eticii în stomatologie.** Veracitatea (sau spunerea adevărului) este definită în etica medicală ca un mod de transmisie exhaustivă, obiectivă și corect științifică, dar reprezintă totodată și un mod prin care profesioniștii din domeniul sanitar măreștează capacitatea de înțelegere a pacientului (în practica medicală/stomatologică) sau a subiectului (în cercetarea biomedicală). Veracitatea, ca principiu moral al practicii medicale, are o istorie lungă și complicată; doar recent acest principiu s-a stabilizat normativ și a fost clar diferențiat de consimțământul informat. Scopurile acestui articol sunt: de a prezenta o scurtă istorie a veracității în practica medicală, de a realiza o analiză normativă și descriptivă a acestuia și în final de a prezenta câteva aplicații practice ale veracității în medicina dentară.

**Cuvinte cheie:** *veracitate; medicină dentară; etică normativă; amalgam; comercializare*

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## 1. Introduction

Veracity (or truth-telling) in healthcare is defined as the “comprehensive, accurate, and objective transmission of information, as well as to the way the professional fosters the patient’s or subject’s understanding” (Beauchamp and Childress, 2005). According to the American Dental Association “The dentist has a duty to communicate truthfully. This principle expresses the concept the professionals have a duty to be honest and trustworthy in their dealing with people. Under this principle, the dentist’s primary obligations include respecting the position of trust inherent in the dentist-patient relationship, communicating truthfully and without deception, and maintaining intellectual integrity”(2017). Veracity is considered, by the ADA, as one of the main five ethical principles governing dental practice, together with autonomy, non-maleficence, justice, and beneficence(2017), and the approach is distinct from general medicine, where the main principles of biomedical ethics are only four, namely autonomy, non-maleficence, justice, and beneficence. This distinction warrants a question regarding why the need of individualizing veracity as a fundamental, distinct ethical principle in dental medicine.

## 2. A short history of veracity

Veracity, as a moral principle guiding medical (and dental practice), has a long and complicated history. According to Beauchamp and Childress, traditionally, Codes of Ethics tended to ignore this virtue. It is not identifiable in fundamental documents, such as the Declaration of Geneva of the World Medical Association (until the 1980s), nor in the Hippocrates Oath(Beauchamp and Childress, 2005). Books of medical ethics have debated the issue, but often, at least until the second half of the 20th century, veracity was often seen as something good to be present, but not mandatory. For example, Thomas Percival, in the book that coined the term “medical ethics”, considered that truth-telling was a duty, while beneficence was a virtue. When duties and virtues are in conflict, virtues should prevail:

*"In the first (duty to the patient, n.n.), it is a relative duty, constituting a branch of justice; and may be properly regulated by the divine rule of equity prescribed by our Saviour, to do unto others, as we would, all circumstances duly weighted they should do unto us. In the second, it is a personal duty, regarding solely the sincerity, the purity, and the probity of the physician himself. To a patient, therefore, perhaps the father of a numerous family, or one whose life is of the highest*

*importance to the community, who makes enquiries which, if faithfully answered, might prove fatal to him, it would be a gross and unfeeling wrong to reveal the truth. His right to it is suspended, and even annihilated, because its beneficial nature being reverse, it would be deeply injurious to himself, to his family, and to the public; and he has the strongest claim, from the trust reposed in his physician, as well as from the common principles of humanity, to be guarded against whatever would be detrimental to him. In such a situation, therefore, the only point at issue is, whether the practitioner shall sacrifice that delicate sense of veracity, which is so ornamental to, and indeed forms a characteristic excellence of the virtuous man, to this claim of professional justice and social duty. Under such a painful conflict of obligations, a wise and good man must be governed by those which are the most imperious; and will therefore generously relinquish every consideration, referable only to himself.(Percival, 1803)*

The approach Percival presented in his book was seen as a moral obligation by the Code of Ethics of the American Medical Association until the 20th century. For example, in the 1903 version of the Code was stated that: "The physician should be a minister of hope and comfort to the sick, since life may be lengthened or shortened not only by act but by the words or manner of the physician, whose solemn duty is to avoid all utterances and actions having a tendency to discourage and depress the patient". Therefore the word of the physicians should be chosen wisely, not to inform the patient, but rather to minimize his/her pain. A similar approach was identifiable in Europe. For example, in France, Amedee Dechambre considered truth-telling to be permissible, but only when the physician was sure that by telling the truth he would not do more harm to the patient: „Je le reconnais volontiers encore il se rencontre des malades qu'un stoïcisme extraordinaire ou des espérances supérieures à celles dont nous disposons permettent de mettre face à face avec l'avenir qui les attend. Ce sont là des exceptions rares"(Dechambre, 1881). A different approach was identifiable at the same time in Germany. Carl Stooß strongly argued for the need of a correct information before the patient gives his consent, and linked it to trust - frankness will increase the confidence of the patient in his physician, while a soothing, dubious behavior would cause mistrust:

Ich finde sogar, der Arzt, der ein Kind durch einen operativen Eingriff aus unmittelbarer und nicht anders ableitbarer Lebensoder Gesundheitsgefahr errettet, nehme dem Wesen nach eine Notstandshandlung vor. Es lassen sich allerdings Fälle eigenmächtiger

Behandlung denken, die schwere und strafwürdige Eingriffe in die persönliche Freiheit enthalten, so namentlich, wenn die Meinungen der Fachmänner darüber, ob eine operative Behandlung angezeigt sei, geteilt sind, und die Operation lebensgefährlich und nicht sehr aussichtsvoll ist. Ein Arzt, der unter solchen Umständen gegen den Willen des Berechtigten zur Operation schreitet, muss bestraft werden, wenn die Patienten nicht der Willkür des Chirurgen preisgegeben werden sollen. In der Privatpraxis kommen Übergriffe des Arztes in dieser schroffen Form gewiss höchst selten vor. Denn die Natur des Dienstvertrages, der zwischen dem Patienten und dem Arzt besteht, wird auch von dem Rechtsunkundigen instinktiv erkannt und praktisch gewürdigt. Doch wird mancher Arzt dem Patienten eine Behandlung, die er einzuleiten wünscht, weniger bedenklich darstellen, als sie wirklich ist.

Kritisch scheint der Fall zu sein, wenn der Arzt befürchten muss, eine offene Darlegung des Zustandes, in dem sich der Patient befindet, und der Behandlung, die der Zustand erfordert, könnte das Befinden des Patienten ungünstig beeinflussen. Allein rechtlich ist die Lösung dieses Falles klar. Da die Einwilligung des Patienten zu der Behandlung, die der Arzt vorschlägt, nur dann rechtlich wirksam ist, wenn sie auf Grund eines wahrheitsgemäßen Berichtes des Arztes erteilt wird, und da die Einwilligung des Patienten zu der Behandlung wertlos ist, wenn der Patient durch den Arzt über seinen Zustand und über die Aussichten der Behandlung getäuscht worden ist, so ist es Pflicht des Arztes, dem Patienten, dessen Zustimmung zu der Behandlung er verlangt, rückhaltlos, wenn auch gewiss in schonender Form, die Wahrheit zu sagen. Die Wahrheit hat übrigens selbst in einem solchen Falle trotz aller Bitterkeit eine gesunde Kraft; sie wird den Patienten nicht stärker angreifen als die halbe Wahrheit, die zur andern Hälfte Unwahrheit ist. Der entschiedene Freimut des Arztes wird das Vertrauen des Patienten in seinen Arzt befestigen, während ein zweideutiges, beschönigendes Verhalten des Arztes das Misstrauen des Kranken erregen muss (Stooß, 1898).

A slightly different approach had Alber Moll, maybe the most well-known ethicist in Germany at the beginning of the 20th century. In the book *Ärztliche Ethik: Die Pflichten des Arztes in allen Beziehungen seiner Thätigkeit* [en. *Medical Ethics: The Duties of the Physicians in All Relations of His Work*], he rejected the opinion of Immanuel Kant about the need for truthfulness in any

circumstances, arguing that is not applicable in medical practice(Moll, 1902, Maehle, 2012). He differentiated two main instances: physicians as experts, and physicians as clinicians. As experts, the physicians had to tell the truth to their patients, except when there was a significant risk of suicide. As clinicians, beneficence had to prevail - so, if the well-being of the patient was better served by deception, it was allowed. In incurable patients, Moll believed that truth-telling was usually needed, as the patients had to do various acts based on the sincere prognosis, such as writing a will or getting the last rites. However, he was uncertain whether the patient had to be informed by the physician, arguing that, at least occasionally, it would be better for the patient if the bearer of bad news was a third party(Moll, 1902).

In Romania, before World War 2, the approach to truth-telling was not regulated, and there were a lot of nuances, depending on the authors. For example, Minovici and Stănescu, considered that patients should be informed truthfully about their medical status, but only if, by doing so, they were not hurt even more: "The physician treats humans and has to face susceptibilities that he must know how to spare; he will tell the whole truth, and if the case requires it, will hide the whole truth."(Minovici and Stănescu, 1939-1940) Similarly, Kerbach recommended truth-telling whenever it was beneficial for the patient, but only if it is useful; otherwise, he advised discretion:

*When telling the diagnosis, we have two ways: (1) to tell the truth, whole or in part, (2) to hide the truth, complete or in part. (...) As a general principle, the physician owes the whole truth to the sick or family, especially when knowing the truth favors the application of the treatment and the recovery. Our duty is to decisively prevent a young tuberculosis man or woman, when this disease menaces the patients, by recommending them to follow strictly the adequate rules of true hygiene (...) Any warning of this type we would give, we should not forget that some sick can be discouraged, a fact that must be avoided by any means. This is the limit to truth-telling. Once his knowledge causes prejudice to the patient, we are obliged to lie. When the disease is lethal, by lying, we will plant in the soul of the patient – against our provisions, the trust and hope of recovery"(Kernbach and Nicolae, 1935).*

If truth-telling was not possible, the physician was obliged not to lie to the patient, as this would be contrary to the moral status of the physician(Minovici and Stănescu, 1939-1940). Wexler argued that truth-telling should be the rule, based on the patient's right to self-determination; however,

he believed that the information should only contain relevant information regarding potential risks, not about every inherent risk of the intervention: “In principle, everybody had the right to dispose of his own body. A treatment, or a surgery, which has risks, should be performed only after the consent of the sick. But the physician should not scare the diseases with possible, but rare risks. The sick has to be prepared to endure the surgery by making him confident of the result, and not by raising any moral resort.”(Wexler, 1938).

From the 1950s onward, truth-telling was usually associated with informed consent. For a physician to obtain the consent of the patient for a medical procedure, he/she had to inform him properly about the proposed intervention (diagnosis, prognosis, risks, benefits, alternatives, and so on). The information given to the patient had to be scientifically correct, as otherwise the decision would not have been taken based on medically relevant criteria, and subsequently, the informed consent would have been null and void. For example, in the Nuremberg Code is stated: “Required is the voluntary, well-informed, understanding consent of the human subject in a full legal capacity”(Code, 1949). The “well-informed consent” was implicitly based on accurate information, as this was the only way for the consent to be given voluntarily.

Only recently, veracity became an explicit norm in medical ethics. In the Oviedo Convention is noted that “Everyone is entitled to know any information collected about his or her health. However, the wishes of individuals not to be so informed shall be observed”(1997). This right to information is the legal enunciation of the principle of veracity – if patients have the right to their medical information, physicians are morally obliged to provide them truthfully. The World Medical Association Declaration of Geneva, as amended by the 68th General Assembly (Chicago, 2017), stated that “I WILL SHARE my medical knowledge for the benefit of the patient and the advancement of healthcare.” Sharing medical knowledge implies veracity and, as seen in this paragraph, it is aimed at both the patient and advancement of healthcare.

### **3. A normative and descriptive analysis of veracity**

Veracity is based on the principle of respect for autonomy – we cannot respect (except in very particular cases), the autonomy of our patients if we do not recognize their right to receive proper, relevant information regarding their medical status. As veracity was often equated with giving information to patients, which is a fundamental step before obtaining the informed consent(Hostiuc, 2012, Hostiuc et al., 2011), many authors considered them to be similar. However, according to Beauchamp and Childress, there are three main differences. The first one is that veracity is based on the respect owed to

others, while within informed consent is mainly based on the respect for the autonomy of the patient (Beauchamp and Childress, 2005). The distinction is essentially twofold. First, veracity extends and outside the realm of the physician-patient interaction, a concept also implied by the last version of the WMA Declaration of Geneva. Secondly, veracity is not applicable only when there is a legal and moral duty to disclose information, as is the case with informed consent, but instead it is applied irrespective of it. For example, persons without decisional capacity, and who do not have to be informed about the procedure for the consent (which could be given by a legal representative, such as a tutor, or by a family member), are still ought veracity. They still need to be informed correctly about their medical status. The second one is that veracity is connected with other moral obligations of physicians, such as fidelity, promise-keeping, or contract (Ross, 2002). The physician-patient relationship is contractual; in any contract, irrespective of its type, both parties have the duties – physicians have the moral and medical responsibilities associated with the profession, while patients – duties such respecting the physicians, disclosing relevant information about them/their diseases, and so on. The third distinction is the relation between veracity and trust (Beauchamp and Childress, 2005). Informed consent, in its nature, tends to counterbalance the paternalistic attitude of the physicians, which is inherently based on trust – physicians act paternalistically because the patients trust them, trust that they would do whatever is needed for their medical good, and do not feel the need to be highly involved in the decision process. Informed consent (or more precisely the informative model of the physician-patient relationship), needs trust on a much more limited nature- the patients need to trust that physicians informed them correctly, and have to believe the fact that they will act according to their recognized wishes, stated through the informed consent form. Veracity, as seen before, extends beyond the arbitrary limits of informed consent, and was shown as essential to foster trust within the physician-patient relationship, irrespective of its type.

Veracity is mandatory from a Kantian moral perspective, as otherwise the patient would no longer be an end in itself (the end-results would become the medical wellbeing of the patient), but rather a means through which the physician tried to obtain the end-results, by manipulating the medical information. From a strictly utilitarian perspective, in particular circumstances veracity could be breached, as there are specific cases in which patients would be made worse by telling them the truth about their medical status. There are three main instances in which veracity could be breached, in a limited fashion: by using placebo, therapeutic privilege, and hiding the truth in clinical trials (e.g. in blind studies, in which the subject does not know if they will receive the active substance or the control) (Hostiuc, 2014).

Breaches of veracity can be of two main types: commisive (namely actively lying to the patient), and ommisive (avoiding to tell the truth, with variants such as using medical jargon to block patients in understanding the true nature of their medical status). There are many negative consequences of veracity breaches, such as: (1) decreases the trust in their physicians, which, if found out by the patient, could lead to lying, or hiding of relevant information; (2) could alter the decision making process of the patient, therefore nullifying the consent, (3) decreases the overall trust of the patients in the medical profession, (4) decreases therapeutic compliance, (3) decreases the chances of healing (Hostiuc, 2014).

Veracity breaches are usually generated by hiding information about the diagnosis (e.g., in cancer patients), or about the risks of the medical procedure (if it is associated with high mortality). Hiding data about the diagnosis could create a misappropriated view regarding the real healthcare status of the patient(Hostiuc, 2014). Often, physicians use as an excuse the fact that patients do not want to know their real medical status, a view that was shown to be significantly overrated. Physicians have a moral duty to tell the truth to their patients and hide it only if in particular circumstances (see above), or when the patients (not their family members), explicitly request it. Hiding the magnitude of the risks associated with an intervention is also often justified by physicians for non-maleficence-related reasons – they sometimes argue that patients would refuse to undergo a specific medical procedure due to its high risks. However, this approach breaches the principle of respect for autonomy; moreover, it generates a lack of legal protection for the physicians if the risk materializes(Aluas and Gherman, 2016, Hostiuc, 2014).

#### **4. Sample applications of the veracity principle in dental medicine**

##### ***4.1. Misrepresenting information about dental amalgams and other restorative materials***

In the last decades, there have been published a lot of materials suggesting a possible correlation between the use of dental amalgams, or other restorative materials, and diseases such as Alzheimer's (Saxe et al., 1999), Parkinson's (Ngim and Devathanan, 1989), kidney disease, or multiple sclerosis (Bates et al., 2004)). Based on this information, many dental professionals began to recommend removal of the dental amalgams, and their replacement with more modern materials. Later studies refuted, however, these associations. For example, a study commissioned by the European Commission to the Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR)

(Rodríguez-Farre et al., 2016). This study identified a series of issues that limited the previously shown correlations. For example, it was difficult to find an association between dental amalgams and diseases, as mercury exposure is usually expressed as the total amount of mercury in body fluids, without a clear differentiation between organic and inorganic derivatives (Rodríguez-Farre et al., 2016). Fish consumption, which is the main cause of mercury accumulation in the human body, is associated with increases in organic mercury (methylmercury); amalgams are associated with increases in elemental mercury or other inorganic forms. The accumulation of inorganic mercury in the adult brain is associated with the number of amalgam fillings; in unborn children, mercury concentration in the kidney (but not the brain), is associated with the number of amalgam fillings of the mother. Therefore, in theory, at least, mercury fillings could cause neurotoxicity in adults, or toxic kidney diseases in children. However, there are no scientifically objective proofs of these associations, based on studies done on a proper scientific methodology (Rodríguez-Farre et al., 2016). Therefore, the removal of mercury-based amalgams should not be recommended, based on their potentially negative health-related consequences. Due to similar data, the American Dental Association gave the following recommendation: “based on current scientific data the ADA has determined that the removal of amalgam restorations from the non-allergic patient for the alleged purpose of removing toxic substances from the body, when such treatment is performed solely at the recommendation of the dentist, is improper and unethical. The same principle of veracity applies to the dentist’s recommendation concerning the removal of any dental restorative material” (Association), 2017).

#### ***4.2. Disclosure of a conflict of interest***

As seen above, veracity extends beyond the physician-patient relationship. One such extension is represented by the duty to disclose any relevant conflict of interest when presenting education or scientific information in articles, presentations, or other public forms of disseminations (Association), 2017). Potential conflicts of interest include monetary compensation for the participation to the meeting, monetary compensations for the development of the study, publication charges, contracts with pharmaceutical companies, and so on. Non-disclosure leads to a breach of the veracity principle.

#### ***4.3. Marketing or Sale of Products and Procedures***

Physicians should not be involved in commercialization of other products and procedures; here are included selling non-procedure related dental tools (such as toothbrushes), or substances (such as toothpaste). This is also supported

by many Ethical Codes of National Professional Dental Associations. For example, in the Art 29 (2) from the Code of Ethics of the Romanian College of Dental Professionals, is stated that “The profession of medical dentist should not be practiced as a commercial activity”(2010). The underlying ethical principles of this statement are veracity and loyalty. Patients trust their physicians in seeking their medical benefit primarily within their professional relationship; commercialization of secondary products (even if they are potentially useful for the patient) generates a direct conflict of interests between these two parties, which should be solved, according to the principle of double loyalty, in favor of the patient (except in very particular circumstances). If dental physicians believe that the patient would benefit from a product or procedure that is not directly needed for the treatment of the disease for which he/she is treated and gave the unambiguous informed consent, they should recommend the most generic form of the product (e.g. a mouthwash with chlorhexidine to prevent plaque formation, not a particular commercial product such as Listerine®). Moreover, the recommendation should not include a particular commercial agent that sells that product, but rather to give a generic prescription, leaving the decision of where to buy to the patient. A similar approach is identifiable in the American Dental Association Code of Ethics and associated recommendations, in which is stated: “Dentists who, in the regular conduct of their practices, engage in or employ auxiliaries in the marketing or sale of products or procedures to their patients must take care not to exploit the trust inherent in the dentist-patient relationship for their own financial gain. Dentists should not induce their patients to purchase products or undergo procedures by misrepresenting the product’s value, the necessity of the procedure or the dentist’s professional expertise in recommending the product or procedure.” (Association), 2017)

In conclusion, veracity has a wide applicability in dental practice, both within and outside the classical physician-patient relationship. It has to be correctly understood and applied in clinical practice, to minimize the risks of deontological breaches of this basic ethical principle.

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## **PATIENTS' SELF-PERCEPTION, ATTITUDES AND AWARENESS OF HEALTH RISK FACTORS (PATIENTS' JUDGMENT OF RISKS)**

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**ABSTRACT.** The construction of risk perception is important, because perception has a great inertia, and it shapes the attitudes and the human behavior. Ill people are more vulnerable and susceptible than healthy people, their coping and resilience strategies being jeopardized by emotional determinants.

**Methods.** An anonymous questionnaire including items about the reason/reasons for hospital admission, diagnosis at admission, and questions with multiple-choices answers trying to detect patients' perception on their health and the awareness of risk factors conditioning the health status was used on 200 patients hospitalized in three clinics: Infectious Diseases, Occupational Medicine and Medical Clinic.

**Results.** Demographic and socio-economic structure of patients differ from one clinic to another. Although among the first three sources of information frequently accessed, internet is on the last place when it comes on confidence. Most trustful are doctors, then TV and friends, the least trustful being radio, magazines and internet. Patients' attitudes and awareness of health risk factors reflect their knowledge and a discrepancy between attitudes and behavior. Many of presented results in ill people are similar to healthy people, but in terms of disease perceived risk, patients are much more influenced by their level of knowledge and socio-economic level, and other unconscious motivational factors, conducting to an underestimation of risk.

**Conclusions.** Patients' health education in hospitals is important, but Romania nowadays is confronting a severe shortage of medical staff, so further and refined research is needed to better and fully understand the factors underlying risk perception in ill people.

**Key words:** *risk perception, danger, attitudes, patients' behavior, environment*

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**REZUMAT. Auto-percepția pacienților, atitudinile și conștiința cu privire la factorii de risc în sănătate (judecata riscurilor în percepția pacienților).**

Construirea percepției asupra riscului este importantă, deoarece percepția are o mare inerție și formează atitudinile și comportamentul uman. Oamenii bolnavi sunt mai mult vulnerabili decât oamenii sănătoși, coping-ul și strategiile de reziliență fiind periclitare de factorii emoționali.

**Metode.** Un chestionar anonim care conține elemente despre motivul / motivele internării la spital, diagnosticul la internare și întrebări cu opțiuni posibile de răspunsuri încearcă să detecteze percepția pacienților asupra sănătății lor, fiind utilizată conștientizarea factorilor de risc care condiționează starea de sănătate la 200 de pacienți internați în trei clinici: Boli Infecțioase, Medicina muncii și Clinică medicală.

**Rezultate.** Structura demografică și socio-economică a pacienților diferă de o clinică la alta. Printre primele trei surse de informații frecvent accesate, internetul este pe ultimul loc când vine vorba de încredere. Cei mai de încredere sunt doctorii, apoi televiziunea și prietenii, încrederea cea mai redusă o au în radio, reviste și internet. Atitudinile pacienților și conștientizarea factorilor de risc pentru sănătate reflectă cunoștințele lor, fiind evidentă o discrepanță între atitudini și comportament. Rezultatele percepției la pacienți sunt similare cu cele ale persoanelor sănătoase, dar în termeni de percepție a riscului de boală, pacienții sunt influențați de nivelul de educație, de cel socio-economic, și de factorii motivaționali, fapt ce duce la o subestimare a riscului.

**Concluzii.** Educația pacienților cu privire la sănătate în spitale este importantă, dar România zilelor noastre se confruntă cu o lipsă severă de personal medical, este nevoie de cercetare atentă pentru a înțelege mai bine factorii care stau la baza percepției riscului de boală.

***Cuvinte-cheie:** percepția riscului, pericol, atitudini, comportamentul pacienților, mediu*

## **Introduction**

Although the concepts of danger and risk are often used interchangeably, their meaning is greatly different for specialists. Hazard/peril refers to factor, situation or condition with an intrinsic harmful potential, while risk represents the probability to manifest the negative effect, if someone is exposed to danger (and so, is a future event, socially and subjectively builded) (Buwal, 1991; Bell, 2001).

The construction of risk perception is important, because it shapes the attitudes and the human behavior (Sjoberg, 2000, 2003; Slovic 1978). Perception represents a particulate psychic process of organizing and synthesizing extern stimuli, and once crystallized, have a great inertia.

The risk perception depends on many factors: age, gender (controversial results), religious participation (weak positive correlation), social structure, education (level of knowledge), political orientation, income, familiarity, controllability, the fact of being or not an ordinary, natural, fair, fatal, feared, diffuse in space/time event (Fischhoff, 1987; Flynn, 1994).

When it comes on risk perception, it may not exist a real stimulus, risk being a probability of negative effect, un occurred event, which only can be imagined, based on attitude, the degree of awareness of danger, vulnerability (subjective probability), and cognition (8).

At the beginnings, first theories about risk perception (Starr, 1969) were focused on cognitive processes, underlying the importance of information (insufficient/incorrect information could determine oversized fears).

Then, psychological approaches highlight the human preferences (how much risk people are willing to accept) in risk perception building ([http://en.wikipedia.org/wiki/Risk\\_perception](http://en.wikipedia.org/wiki/Risk_perception); Tversky and Kahneman, 1974; Gregory and Mendelsohn, 1993; Slovic, 2000).

The anthropological/sociological theory sustains the importance of social support (perceptions are builded by institutions, cultural values, way of life) (Douglas and Aaron, 1982; Douglas, 1992).

The most recent approaches try to explain processes of risk amplification or reduction by personal filters (risky events interact with individual psychological factors, cultural and social factors that can change risk perception (Fischhoff, 1987; [http://en.wikipedia.org/wiki/Risk\\_perception](http://en.wikipedia.org/wiki/Risk_perception); Tversky and Kahneman, 1974; Gregory and Mendelsohn, 1993; Slovic, 2000; Douglas, 1992; Kasperson J. and Kasperson R.E., 2005; Wildavsky and Dake, 1990; Robin and Mendelson, 1998; Brenot, Bonnefous and Marris, 1998).

### **Purpose and objective**

Risk perception is influenced by numerous factors: familiarity, controllability, the fact of being or not an ordinary, natural, fair, fatal, feared, diffuse in space and time event; gender, income, education, age may also explain differences in risk perception.

Ill people are more vulnerable and susceptible than healthy people, their coping and resilience strategies being jeopardized by emotional determinants.

This paper aims to analyze health risk factors perception in hospitalized patients by assessing their health status and various factors - medical, occupational, and behavioral - that can influence health.

## Methods and patients

The study was conducted on a group of 200 patients hospitalized in three clinics from Cluj-Napoca: Infectious Diseases (ID), Department of Occupational Medicine (OM), and Medical Clinic 1 (M1). For data collection was used an anonymous self-filled questionnaire including demographic variables (age, gender, education level, and income); questions about the reason/reasons for hospital admission; diagnosis at admission; and 20 questions with multiple-choices answers, trying to detect self-perception on their health and the awareness of risk factors conditioning the health status (behavioral, occupational, medical, hereditary).

Data were processed in a Microsoft Office database using Microsoft Word and Excel. Chi-square test was also used, significance being given by p-value<.05.

## Results

While in ID and M1, patients were split almost evenly in the two genders, most of the patients from OM (70%) were men (table 1). Regarding the provenance, most patients in ID and M1 (70%) are from urban environment, and 64% in OM are from rural environment.

The highest level of education can be found in ID (31% are university graduates), and the lowest level in M1 primary school), while in OM most of patients are vocational school leavers (45%).

Incomes differ from one clinic to another, 80% of all patients having as monthly salary very low to low (fewer than 1500 lei).

**Table no. 1.** Gender, age, provenance, studies and income

| Hospital   |                                    | ID<br>(n=103)<br>% | OM<br>(n=47)<br>% | M1<br>(n=50)<br>% | Total<br>(n=200)<br>% |
|------------|------------------------------------|--------------------|-------------------|-------------------|-----------------------|
| Gender     | M                                  | 48.5               | 70.2              | 56.0              | 55.5                  |
|            | F                                  | 51.5               | 29.8              | 44.0              | 44.5                  |
| Provenance | Urban                              | 70.8               | 36.1              | 70.0              | 62.5                  |
|            | Rural                              | 29.2               | 63.9              | 30.0              | 37.5                  |
| Studies    | Primary school                     | 23.3               | 17.0              | 36.0              | 25.0                  |
|            | Vocational school                  | 14.5               | 44.6              | 5.8               | 21.0                  |
|            | High school                        | 23.0               | 27.6              | 30.0              | 26.0                  |
|            | Higher general secondary education | 7.79               | 1.9               | 3.8               | 7.0                   |
|            | Faculty                            | 31.0               | 2.9               | 6.7               | 21.0                  |

PATIENTS' SELF-PERCEPTION, ATTITUDES AND AWARENESS OF HEALTH RISK FACTORS

| Hospital         |           | ID<br>(n=103)<br>% | OM<br>(n=47)<br>% | M1<br>(n=50)<br>% | Total<br>(n=200)<br>% |
|------------------|-----------|--------------------|-------------------|-------------------|-----------------------|
| Income (lei)     | < 500     | 23.3               | 19.1              | 28.0              | 23.5                  |
|                  | 500-1000  | 34.9               | 57.4              | 42.0              | 42.0                  |
|                  | 1000-1500 | 19.4               | 19.1              | 20.0              | 19.5                  |
|                  | 1500-2000 | 8.7                | 0.0               | 6.0               | 6.0                   |
|                  | 200-2500  | 5.8                | 2.1               | 2.0               | 4.0                   |
|                  | 2500-3000 | 1.9                | 0.0               | 2.0               | 1.5                   |
|                  | >3000     | 5.8                | 2.1               | 0.0               | 2.5                   |
| Mean age (years) |           | 48.6               | 51.5              | 60.0              | 52.1                  |

On a scale of four degrees, patients were asked to self-appreciate their health status (very good, good, good enough, and bad). Globally, only 1% of all patients has appreciated self-health as very good, all of them from ID (table 2).

Bad or good enough health status is considered by 64% in ID, 95.7% in OM, and 86% in M1. Most subjects considering their health status as good or very good are from ID (35.9%), and the fewest in OM (4.2%).

One third of patients from ID are aware they have a risk of disease inheritance and chose to make periodic checks and to inform themselves in order to avoid such as possibility. In the other two Clinics, the main attitudes to avoid this risk are represented by periodic checks and avoiding the known risk factors.

**Table no. 2.** Self-appreciation of health status

|  |   | ID (%) | OM (%) | M1 (%) | Total (%) |
|--|---|--------|--------|--------|-----------|
| Self-appreciation of health status                 | Very good                               | 2.9    | 0      | 0      | 0.96      |
|  | Good                                    | 33     | 4.2    | 14     | 17        |
|  | Good enough                             | 41.7   | 46.8   | 54     | 47.5      |
|  | Bad (poor)                              | 22.3   | 48.9   | 32     | 34        |
| Do you have a risk of disease inheritance?         |   | 33     | 29.7   | 22     | 28        |
| Attitudes to avoid the risk of disease inheritance | Inform                                  | 32     | 17     | 14     | 21        |
|  | Avoid known risk factors                | 26     | 34     | 34     | 31        |
|  | Periodic checks                         | 52     | 72     | 70     | 65        |
|  | Don't care/don't change self-life style | 17     | 6      | 12     | 12        |

Table 3 shows the awareness about personal medical condition and disease complications, the importance of treatment and profession, the risk of hospitalization, and medical intervention.

Table no. 4 shows some aspects of nutrition attitudes and habits, as well as the main sources of information about health.

**Table no. 3.** Patients risk perception (a)

| Questions  |                        | ID (%) | OM (%) | M1 (%) | Total (%) |
|--|------------------------|--------|--------|--------|-----------|
| Do you have a chronic disease?                   | Yes                    | 41.7   | 63.8   | 48     | 51        |
|  | No                     | 50.5   | 19.1   | 48     | 39        |
|  | Don't know             | 7.7    | 17     | 4      | 10        |
| Do you follow a chronic treatment?               | Yes                    | 45.6   | 72.3   | 70     | 63        |
|  | No                     | 54.4   | 27.7   | 30     | 37        |
| Are you aware of your disease complications?     | Yes                    | 64.2   | 81.4   | 60.4   | 69        |
|  | No                     | 35.8   | 18.6   | 39.6   | 31        |
| Is important to follow the treatment?            | Yes                    | 96.1   | 81.4   | 60     | 79        |
|  | No                     | 3.9    | 18.6   | 40     | 21        |
| Do your pills bring extra-risks for your health? | Little                 | 64.1   | 72     | 60.4   | 65.5      |
|  | Moderate               | 25.6   | 18.6   | 30.2   | 25        |
|  | Much                   | 8.9    | 9.3    | 9.3    | 9.2       |
|  | Very much              | 1      | 0      | 0      | 0.6       |
| Is hospitalization a risk factor for health?     | Yes                    | 20.4   | 12.8   | 10     | 14        |
|  | No                     | 68.9   | 72.3   | 82     | 74        |
|  | Don't know             | 10.7   | 14.9   | 8      | 11        |
| Are medical interventions risky?                 | Yes                    | 44.6   | 29.8   | 38     | 37        |
|  | No                     | 32     | 36     | 40     | 36        |
|  | Don't know             | 23.3   | 34     | 22     | 26        |
| Is risky your profession or place of work?       | Yes                    | 48.6   | 82.9   | 56     | 62.5      |
|  | No                     | 46.6   | 10.6   | 36     | 31        |
|  | Don't know             | 4.8    | 6.4    | 8      | 6.4       |
| Attitude to avoid professional risk factors      | Periodic checks        | 47     | 60     | 34     | 47        |
|  | Changing place of work | 17     | 19     | 12     | 16        |
|  | No attitude            | 22     | 13     | 46     | 27        |
|  | Don't know what to do  | 15     | 13     | 12     | 13        |

**Table no. 4.** Patients risk perception (b)

|   |                | ID (%) | Questions | M1 (%) | Total (%) |
|---|----------------|--------|-----------|--------|-----------|
| Is your nutrition healthy?                                      | Healthy        | 39.8   | 46.8      | 44     | 43.5      |
|   | Satisfactorily | 52.4   | 48.9      | 46     | 49        |
|   | Unhealthy      | 7.8    | 4.2       | 10     | 7.3       |
| Do you use unhealthy products?                                  | Alcohol        | 21.4   | 23.4      | 18     | 21        |
|   | Tobacco        | 32     | 25.5      | 14     | 24        |
|   | Salt           | 9.7    | 17        | 12     | 13        |
|   | Drugs          | 0      | 0         | 0      | 0         |
|   | None           | 51.4   | 57.4      | 62     | 57        |
| Number of concomitant unhealthy products                        | 0              | 51.4   | 57.4      | 62     | 57        |
|   | 1              | 35.9   | 29.8      | 24     | 29.9      |
|   | 2              | 12.6   | 8.6       | 14     | 11.7      |
|   | 3              | 0      | 4.2       | 0      | 1.4       |
|   | 4              | 0      | 0         | 0      | 0         |
| Have you a disease risk by consuming these types of substances? | Yes            | 81.5   | 93.6      | 88     | 87.7      |
|   | No             | 10.7   | 2.1       | 6      | 6.3       |
|   | Do not know    | 7.7    | 4.2       | 6      | 6         |
| Ever got ill after certain food consumption?                    | Yes            | 31     | 45        | 30     | 35        |
|   | No             | 69     | 55        | 70     | 65        |
| How often do you search information about health?               | Daily          | 11.6   | 8.5       | 18     | 12.7      |
|   | Once a week    | 14.5   | 21.3      | 16     | 17.3      |
|   | Once a month   | 24.3   | 21.3      | 26     | 24        |
|   | Twice a year   | 29.1   | 21.3      | 14     | 21.4      |
|   | Never          | 6.8    | 2.1       | 12     | 7         |
| What is your confidence in information sources? (mean scores)   | TV             | 2      | 2.2       | 2.5    | 2.2       |
|   | Radio          | 1.8    | 2.2       | 1.8    | 1.9       |
|   | Magazines      | 1.8    | 1.7       | 1.9    | 1.8       |
|   | Internet       | 1.9    | 1.6       | 1.6    | 1.7       |
|   | Friends        | 2.1    | 2.2       | 2      | 2.1       |
|   | Doctors        | 3.3    | 3.4       | 3.3    | 3.3       |

## Conclusions and discussion

Mean age of all the participants is 52.1 years, most of them coming from urban environment. Globally, for most of subjects the highest level of education is high school, primary school then vocational school or faculty.

In all patients and all the three Clinics, the income of most of them is between 500-1000 Ron, values much under the average monthly salary in Romania (<http://www.viata-medicala.ro>; <http://www.insse.ro>. National Institute of Statistics – Average monthly salary).

The main symptoms justifying the hospitalization are: weakness, pain, fever, breathing difficulty and cough (coughing). Fever was the main reason in ID, breathing difficulty in OM, and pain in M1.

Globally, only 1% of patients have appreciated their health as very good, but none of patients in OM and M1. Over 80% of patients from OM (those who are suffering chronic diseases) and M1 consider their health status as bad or good enough. Most subjects considering their health status as good or very good are from ID, and the fewest in OM. Most of hospitalized patients do not think they could inherit a disease; in order to protect them against such a possibility, they preferred periodic checks and analysis.

More than half follows a chronic treatment (especially from OM and M1) and two thirds of them are aware of possible complications (especially in OM), but only 51% know their illness is a chronic disease (p value for chi-square test <.05). Most of patients are aware about the importance of following treatment. There is no statistical significance between awareness of possible complications and the importance given to following the proper treatment (contingency coefficient=.04 and p-value=.550).

Two-thirds to 3/4 of patients assess the side-effects of medicines (drugs) as low, and a quarter as medium; less than 10% appreciate the risk as high. There is no statistical significance between the given importance of following treatment and health consequences (risks) of medicines (contingency coefficient=.103, p-value=.209).

Hospitalization isn't perceived as a risk factor for health in ¾ of cases, and 1 out of ten patients doesn't know what to believe about this. In Romania, nosocomial infections are under-reported, with a frequency of 1-3%, and about 4% in intensive care units (<http://www.insse.ro>. National Institute of Statistics – Average monthly salary).

In Romania there isn't a fair evaluation of this phenomenon's dimensions, doctors being reluctant about this topic; sanctions, hospital reputation/fame lost, prevent them to officially admit the reality of nosocomial infections. Besides, 21 to 84% of nosocomial infections (in case of surgical site) are manifesting after discharge from hospital (Ghelase et al, 2014), a post-discharge detection program being not available in our country.

Medical interventions are considered risky by over 1/3 of subjects (especially in ID), but one quarter do not have information about this problem

(are not aware about this risk). The chi2-test results show a statistically significance between hospitalization and medical interventions as risk factors (contingency coefficient=.387, p-value=.0001).

Over 60% of all subjects consider that their profession/place of work has/had represented a risk factor for health, mainly among those from OM, and they chose to protect themselves by periodic checks or changing work place. The rest of patients don't have any attitude or don't know what to think about this aspect.

Less than half of subjects believe their food is healthy, and 2/3 of them do not consume any of unhealthy products (alcohol, tobacco, excessive salt, drugs).

Between 90 and 96% of patients consider their nutrition as healthy or satisfactorily, admitting the concomitant presence of 1, 2 or 3 unhealthy products in their life: one third of patients consume only one unhealthy product, 1/10 uses two products, while three concomitant products are consumed exclusively at OM (4%). None of our subjects uses drugs (affirmatively). Tobacco is the most used unhealthy product; excessive salt is affirmatively consumed by only 10 to 17% of patients, although Romania is a country with a high level of salt ingestion, proving that it's a matter of risk perception here.

Only 5.5% of patients admit they consume other types of unhealthy products (coffee, sweets, gaseous juices, cans). Over 80% of subjects consider they are exposed to risk by consuming this type of substances. There is a significant correlation between the number of unhealthy products and the perceived risk of illness (the higher the number of substances, the higher the perceived risk), with p-value <.05. The most aware of risk are subjects which do not consume any of risky products.

There are still subjects not knowing about the possible health risk, or considering any of those products without risk for them. That's because people believe in the possibility of controlling the risks, as an expression of risk denial (Finucane, 2000). Lay people are oriented by the law "all or nothing" (Wright, Rowe and McColl, 2004), they simplify complex problems in "safe-unsafe", "good-bad" (Slovic, 1978). Vulnerability is an important factor influencing the risk perception: if someone considers him/her vulnerable, his/her behavior and attitude are healthier. Ill people have their expectations about disease evolution or complications influenced by their perception about illness and their subjective vulnerability (Armas, 2006; Kouabenan, 1998).

Even if less than 10% of patients consider unhealthy their nutrition, 35% of patients have had food borne diseases, showing discrepancy between attitudes and behavior, and a lower awareness of possible risk factors of nutrition.

In order to protect them from disease, and to be healthy they try to inform themselves once a month or twice a year, doctors, TV and internet being the most accessed sources of information.

For question "What is your confidence in information sources?" the answers were rated with 1 ("very little"), with 2 ("little"), 3 ("much"), and 4 ("very much"), then a mean score was calculated for every answer. Although among the first three sources of information frequently accessed, internet is on the last place when it comes on confidence. Most trustful are doctors (much and very much), then TV and friends (little too much), the least trustful being radio, magazines and internet (little or very little).

Many of presented results in ill people are similar to healthy people, but in terms of disease perceived risk, those presenting a disease are much more influenced by their level of knowledge and socio-economic level (like the very first theories on risk perception), and other unconscious motivational factors, conducting to an underestimation of risk (Brehmer, 1987).

Hence, patients' health education in hospitals is important, but Romania nowadays is confronting a severe shortage of medical staff, and health education is very time consuming.

Although notion of risk perception appears back in 70' years, the meaning is confused and the studies are insufficient, especially in Romanian subjects. In order to better and fully understand the factors emphasizing risk perception in ill people, further and refined research is needed, risk perception being an essential indicator in crisis management and the adoption of policies and strategies to reduce danger.

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## THE FOUR PILLARS OF ECOLOGICAL ECONOMY

DEJAN DONEV<sup>1</sup>

**ABSTRACT.** The consequences of the processes of mass industrialization, of unconstrained resource spending and uncontrolled pollution became apparent. The awareness about the survival of the planet, the humans and the rest of the living world, prescribes that it is time when our species has to re-evaluate the consequences of our reckless actions towards ourselves and nature.

New and separate discipline that investigates the phenomena related to ecology and economy is recognized. "Environmental economy" is the economy that should give answers in front of the collision between the economy and the eco-systems, solutions which will bridge the incompatibility between the economic and the ecological notions of "stability", a prerequisite for sustainability of the eco-system and the economical rules such as "growth as inherent logic of the economic system".

**Key words:** *eco-ethics, nature, environment, ecology.*

**REZUMAT. Cei patru piloni ai economiei ecologice.** Consecințele proceselor de industrializare în masă, cheltuielile cu resurse și poluarea necontrolată sunt evidente în realitatea curentă. Conștientizarea faptului că planeta trebuie să supraviețuiască, la fel oamenii și a restului lumii vii, ne determină să afirmăm că este timpul ca specia noastră să reevalueze consecințele propriilor acțiuni nesăbuite, împotriva noastră înșine și a naturii. Au apărut discipline noi care investighează fenomenele legate de ecologie și economie. "Economia de mediu" este economia care ar trebui să dea răspunsuri conflictului dintre economie și ecosisteme, soluții care să pună capăt incompatibilității dintre noțiunile de economie și de ecologie a „stabilității”, a condițiilor prealabile pentru durabilitatea ecosistemului și regulile economice, cum ar fi „creșterea ca logică inerentă a sistemului economic”.

**Cuvinte cheie:** *eco-etică, natură, mediu, ecologie*

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## **1. Introduction**

Although humans are creatures of nature, they have not developed eco-ethical considerations about the nature until the last century. In this context, the consequences of the processes of mass industrialization, of unconstrained resource spending and uncontrolled pollution became apparent. That is because the industrial society where we are situated did not take into consideration the value behind inseparability of the nature – things and beings in nature do not possess value intrinsically, but they possess value only from our point of view! That makes life harder and the question of existence is relevant to everyone. Hence, the problems related to the anthropological influences towards nature became global. The environmental states and the ecological crisis are increasingly brought to spotlight not only in the academic community, but before the wider audience as well. The ecological crisis is deeply embedded in the development of the modern civilization, threatening the function of the biosphere and the societies in whole, which brings the question of the humans as natural and social beings. The awareness about the survival of the planet, the humans and the rest of the living world, prescribes that it is time when our species has to re-evaluate the consequences of our reckless actions towards ourselves and nature.

## **2. Regress instead of progress!?**

Contrary to this, towards the end of the 19<sup>th</sup> century, many futurologists predicted that in 20<sup>th</sup> century, humanity will solve its issues and there will be true progress which will bring new type of utopia on our planet. Among this predictions which became true are the invention of the telephone, telegraph, the railway system, cars, electricity, free trade and liberalization of the markets, assembly line manufacturing which brought mechanized, modern industrial society that is both efficient and productive... In that regard, humanity did not have opportunity to accumulate its riches until the last 150 years, after the industrial revolution. In the meantime, the damage and the ecological misbalance created by the industries and the economies could not be surpassed by any other example in the history, although the awareness about these issues began to develop with the emergence of the industrialization and urbanization.<sup>2</sup>

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<sup>2</sup> For comprehensive overview of the differences between the economy and ecology, look for the concepts of external economy and diseconomy by the British economist A. Marshal.

In other words, the changes that steer our civilization have assumed their most harmful form since the industrial revolution. They can be expressed as:<sup>3</sup>

1. We are against our environment;
2. We are against other people;
3. Emphasis is put on the individual, which states that the individual (or the company, or the nation in isolation) is most important.

The history of the last century admits that these beliefs were erroneous, as witnessed through the grand, but destructive achievements of our technology and industry. No one thought that world wars, mass pollution or nuclear weapons, the dark sides of the 20<sup>th</sup> century, are possibilities. These beliefs are erroneous according to the contemporary ecological theory as well. The creature that defeats its environment destroys itself!<sup>4</sup>

### **3. Environmental economy – Reality or oxymoron!?**

With the emergence of the assembly line manufacturing, radical overturn changed the relation of humanity towards the life world and the nature at all. Humans became the center of development. The rise of the industrial systems grew rapidly, beginning to occupy, colonize, alter, exploit, pollute and destruct. Although the industrial mass production brought human above nature, it offered higher potential and degree of destruction and decadence. That is why this environmental threat should be located and processed through all levels, starting from the system of values, way of living, politics, law, and especially in the economy, where the business operate.

In this context, the current challenge is to imagine the economic growth which will be both sufficient to supply the demand of the humankind and be eco-friendly, meaning that it can halt the destruction of the eco-systems, aiming to reduce the pollution to reasonable levels. The most urgent matter is inventing the eco-economy. The business community and all of its stakeholders are in need for new and broader perspectives. It is necessary to re-evaluate the viewpoint that we hold when we speak about productivity or any other business-related topic! This should be both pragmatic and ethical – the pragmatism should be balanced with the *holistic approach* for the interconnectedness of the world and the laws of nature, or with other words, ethics and ecology. That should not be pursued with quientistic approach, but with proactive investigating, motivating and influencing all of the different states – through the ethical foundations of the ecological awareness and action.

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<sup>3</sup> Gregory Bateson, *Steps to an Ecology of the Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology*. Ballantine Books, New York, 1972, pp.134.

<sup>4</sup> *Ibid.*, pp. 29.

The pragmatic viewpoint which is goal-oriented and drives changes, does not always respect open mindedness or ethics. Ethics and ecology should be deeply investigated, because the short-term gains that run over the ethical and ecological principles are unsustainable. The next generation of the business community should pursue profits while maintaining the ethical norms and careful considerations for our environment. The thesis that maintains “the competitive nature of the business community which turns people against other people, pushes the whole humankind against the natural world” is dysfunctional. If this logic regards “people as commodity, it can easily commodity every part of the nature, turning it into a resource that can be irresponsibly made and sold out”.<sup>5</sup>

New and separate discipline that investigates the phenomena related to ecology and economy is recognized. “Environmental economy” is the economy that should give answers in front of the collision between the economy and the eco-systems, solutions which will bridge the incompatibility between the economic and the ecological notions of “stability”, a prerequisite for sustainability of the eco-system and the economical rules such as “growth as inherent logic of the economical system”.<sup>6</sup>

The results of the rapid technological and commercial growth with the broken and unjustified change in the balance of nature through exhausting the resources and pollution are apparent. The production that is guided solely by profit, power and prestige, is becoming one of the most terrifying reasons for devastating the nature. The essence of the problem is contained in the ecological shortsightedness and greediness of those who possess economical and political influence, whose constant priority is economic growth – they are motivated by the values founded on profits.<sup>7</sup> Although everyone is convinced that the basic aim of the economic activity is profitability and utility, it is not clear whether they accept continuous and rampant economic growth at the expense of the natural resources.

In this regard, there business models that put profits on first place cannot hold any credence. In the contemporary IT society, we accept the business and ethical practices with fast pace. We consume more information about the activities of the business and the industry, about the local and general consequences. This demands basic ethical and ecological standards in the evaluation and activity of the economy. The eco-ethical perception should be brought in the business activities. The companies should nurture altruistic

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<sup>5</sup> M. Bookchin, *Prema ekološkom rešenju*. Beograd, 1982, pp. 43.

<sup>6</sup> More details provided in G.A. Cole, *Management-Theory and practice*, DP Publications Ltd, London, 1993, pp.223-297.

<sup>7</sup> More details provided in Andre Gorz, *Ecology as Politics*, South End Press, 1979, pp.83-120 & pp.144-160.

regards, despite their motivations for profit. Our capability for holistic approach is more than needed, where we view ourselves and the business from different angle, as part of bigger system.

#### **4. The four pillars of ecological economy**

In the business, apart from the six interest groups, there should be one instance which will be on top. The humankind demands strict moral evaluation – the future is under threat. From here on, the eco-ethical principle, as the eighth part, should be top priority. With other words, the protection of the environment which collides with the short-sighted business opportunities should prevail. In order to formulate the priorities in the decision-making process, we should primarily be concerned about the long-term effects over the environment. We must go above the narrow-minded understandings about the environment, towards embracing broader ecological perceptions.

In that context, the following form of higher standards is offered, which is the knowledge about the ecology and messages of the ecological ethics that are part of the most important elements of the new bioethics awareness and human behavior:

1. Economical activities should be constrained so that they could not threaten the existence of humankind and disgrace the individual;
2. The economical activity should protect and nurture life as way of existence;
3. The economical activity does not mean profits at the expense of nature, but understanding nature as the sole basis for life on Earth;
4. Economical activity pursued in a undisputed manner regarding the maintaining of the biodiversity, where these actions would protect life, and humans will be held responsible;

Mankind today is faced with the biggest challenge so far - to save the nature from irreversible destruction. The man disrupted the natural balance to catastrophic proportions with actions that border madness. That is why it is once again needed to cultivate its relationship to a boundary beyond which further actions that imply negative impact wouldn't be allowed. Therefore, for a longer period, most of the attention is focused on the business communities - as polluters and agents of the unstoppable growth. The functioning of the business communities has to be diverted to a friendlier course towards the nature because otherwise the quality of life is declining and the survival for all of us is at stake.

Reorganization based on pressure is impossible because the business and the industry are hard to percept with unclear and unstable models of ownership, as well as diffuse production. They only contain the technical and the economic components needed for the reconstruction. Carrying out activities upon command is much harder, more unacceptable, less efficient and less continuous compared to self-aware actions. But the ones that manage it are more under sway of the moral judgments in their decisions which have far less efficient action - complete responsibility for the environmental effects.

It's about the category of decision making function - the management. In such conditions, the philosophy of the management has high continuity. In this time of dramatic and fast changes on the market, the management policy is more important than ever before. Therefore, the question whether it is possible to implement reorganization without pressure and orders, through ethical and ecological awakening as a motivation and driving force, as development and nourishing in the practice of one ethical category - the responsibility of the managerial component of the business community?

If the business goals at the same time are also oriented towards the protection of the environment, and besides that are profitable, that should be rewarded. If that is not the case, in this scenario no one can allow to sit aside and wait, to transfer the guilt to anyone else, to position the profit as singularly valid, while the cradle of life (the nature) is left on its capacities of self-regeneration which is no longer possible. The eco-ethical standards in the business communities must be the driving force of one all-inclusive ethics of life.

That is the case because everyone has the responsibility, everyone has influence, and everyone has interest to develop a business that has to be directed towards preserving the environment in the broadest ecological sense. Namely, in this sense, a new ethics of responsibility of the human for the protection of the environment is needed, namely as defined by Hans Jonas, "the ethics of the solidarity of the human with the organic world, in a way that the commitment for the future collective behavior of the human in conditions of technical civilization would clearly include the future of the nature too"<sup>8</sup>. Otherwise, what is the purpose of the earnings if there are no living conditions in which they can be invested and increased, if they, the living conditions of the personal livelihood, through which the earned is accumulated, are ruined. Mankind must, mostly through the business communities, stick to the ethical principles of its own natural living environment in order to obtain the right implications for broader and systematic perspective of the business and life in general.

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<sup>8</sup> Денко Скаловски, *Етика на одговорноста*. Bigos, Скопје, 2005, p.111.

## 5. Conclusion

At the end, the business and the industry should follow certain basic eternal ethical standards. To formulate the benefits of decision making, the long term care for the environment must always be primary concern. In the process of formulating the priorities in the decision making process, the broad interests of the environment must dominate above all others. That is why the four aforementioned standards are taken as a higher instance. Though, besides the fact that these are higher standards for business activities, they do not overlook the lower standards like the concentration in the resolve of ecological problems, the positive access to the living environment, improving the low level of ecological consciousness of the people, the rejection of the indolence and upgrading the lack of determination to do real actions for the protection of the environment...

Furthermore, they indicate how the standards should impact or how should they be ranked as priorities because the facts are simple: "The influence of the industrial development on the environment causes essential changes that are visible in each of its parts. The industrial system is aggressively taking over the natural environment and is gradually changing and destroying it"<sup>9</sup>. Therefore it is final time to raise awareness and to start acting according to the eco-ethical standards, to immerse to the roots of life, leaving them unharmed. Namely, the "ecology as ethics of communicating between the people and the environment, but also between themselves, makes us remember that we should repair the state of nature, our foundation of existence. This opportunity should not be missed, because the spiritual blindness can overcome the reason and the ecological revolution can fall in front of the despotism of the carelessness!"<sup>10</sup>

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<sup>9</sup> Herbert Gruhl, *Jedna planeta je opljačkana*. Prosveta, Beograd, 1985, p. 98.

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## ACCULTURATION AND STRESS AMONG INTERNATIONAL STUDENTS

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**ABSTRACT.** The possibility of young people to study abroad is attractive but also challenging. The phenomenon of migration due to the desire of study abroad started to interest from the sociological point of view, but also it is a psychological and educational topic. Nowadays, universities are trying to convince teenagers from all over the world to continue their education into the institution, but not many of them are prepared to assure a qualitative integration for people coming from different cultures. The present paper approaches the stress of acculturation among university students. The aim of the study is to the point the theoretic issues related to this phenomenon and to present the used instruments that evaluate its score. Variables that influence the level of stress of acculturation, like sex, depression, family support, social network, language knowledge are discussed. Also, important results from international studies lead in several countries are detailed.

**Keywords:** *international students, acculturation, stress, language barriers, depression, social support*

**REZUMAT. Adaptarea la stres a studenților străini.** Posibilitatea ca tinerii să își poată continua educația într-o țară străină este atractivă dar și provocatoare. Fenomenul migrației datorat studiilor este interesant din punct de vedere sociologic dar a devenit și un subiect de natură psihologică și educațională. În ziua de astăzi, universitățile încearcă să convingă tinerii de pretutindeni să le treacă pragul, dar nu multe dintre ele sunt pregătite să asigure o integrare calitativă a celor care vin din culturi atât de diferite. Prezenta lucrare abordează

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tematica stresului legat de studenții internaționali – aculturația și stresul aculturativ. Scopul studiului este de a puncta aspectele teoretice legate de fenomenul aculturației și de a prezenta unele instrumente psihologice utilizate pentru măsurarea lui și variabilele care influențează stresul legat de aculturație precum genul. Depresia, suportul familial, relațiile sociale, sau nivelul cunoașterii limbii sunt prezentate în lucrare. De asemenea, rezultate importante din studii realizate în țări diverse sunt detaliate.

**Cuvinte cheie:** *studenți străini, adaptare, stres, bariere de limbaj, depresie, suport social*

## **Introduction**

The phenomena of immigration has grown in these past few years proportionally to the rate of globalization brought on by social media, accessible and fast transportation vehicles and, most importantly, the advantages brought on by the world wide web. Such a raise can be especially observed in the ranks of younger age groups, such as students travelling to foreign countries in order to further their education.

The stress related to acculturation is defined as the phenomenon experienced by individuals or groups, on a psychological and cultural level, during the adjustment to a foreign culture (Berry, 2005). Although it is an ancient concept, the term itself has first been used in 1880 (Rudmin, 2003) in order to primarily study, through letters and diaries, the deterioration of mental health arising from loss of traditional mental schemas.

Berry, who conducted the most thorough research into the matters of acculturation, elaborated a framework presenting 4 coping strategies in the case of such individuals, which is commonly known as the Fourfold Model (Berry, 2005, 2006):

- *integration* (maintaining one's cultural identity while successfully engaging with the new society),
- *assimilation* (relinquishing one's culture and adopting the habits of the new society),
- *separation* (maintaining one's cultural identity while choosing to have a minimal interaction with the new customs),
- *marginalization* (minimally interacting with the host culture while relinquishing many of the individual's culture's customs).

While studying individuals adopting one of these 4 strategies, he further discovered that integration is associated with the best psychological state, while

marginalization has the lowest scores. These patterns have been supported by other researches, one example being a study conducted on Turkish immigrants relocated to Netherlands (Ince et al., 2014).

The adaptation process, regardless of the strategy chosen, has been found to present 3 main steps (Berry et al, 1987):

1. contact period: the first contact between the original and the adoptive culture;
2. conflict period: the time in which the main group presses for change, sometimes leading to an identity crisis.
3. resolution period: in this final step, one of the 4 strategies has been chosen, leading to a relative psychological balance.

Immigrants, however, start preparing for the transition long before moving to the new country, the outcome of which is heavily influenced by expectations, social support and stress in a process defined as pre-acculturation (Jasinskaja-Lahti and Yijälä 2011).

The internet in particular, has a strong effect on the process of pre-acculturation, reducing geographic distances and enhancing the worldwide exchange of cultural information while, at the same time, offering new means of communication for students with their families and friends back home.

### **Difficulties of international students**

Among the subcategory of international students, the most common issues are: cultural shock (Nilsson, Buttler, Shouse and Joshi, 2008), psychological hardships, conflicts and barriers (Lin and Yi, 1997) that result from the adjustment process.

Specifically, problems such as language barrier, financial problems, academic difficulties, poor social support and racial discriminations have been shown to have a significant impact on the adjustment of such students (Mori 2000, Sandhu 1995).

Some studies have also shown the length of stay to be a significant variable, longer periods of time being associated with acculturative advantages - the study group used being Chinese international students in Canada (Kuo and Roysircar, 2004), while others, conducted, for example, on Hispanics in America, have shown it to be unrelated to the development of acculturative stress. (Torres and Rollock, 2004).

Social support in particular has been found to have a great impact on acculturative stress, indicated through lacking parental social support (Thomas & Baek Choi, 2006), lack of social interpersonal support or from online social groups (Ye, 2005; Ye 2006).

Among international students, some perceive acculturation stress as a negative concept, leading to various mental problems, while others only focus on the positive opportunities for self-development and perfecting (Nailevna, 2017).

Separation and individuation seem to facilitate adjustment, through the context of proper cohesive familial support (Yard, 2008), being positively related to reduced levels of stress and better self-confidence and psychological status (Harvey & Bray, 1991).

Researchers, considering the importance of such a field of study, have steered the future directions of focus towards identifying the demographic variables (Kuo & Roysircar, 2004), exploring emotional intelligence (Montes-Berges & Augusto, 2007) and further analyzing effective coping strategies (Torres & Rollock, 2004).

### **Instruments used to evaluate the stress of acculturation**

There are multiple measurement scales for acculturative stress, adapted for different subcategories of immigrants in different countries. Most of the first scales used after 1940 were bipolar, with fourfold scales appearing since 1970 and used to uncover the immigrants' attitudes as a one-by-one case study. The ones recommended nowadays, however, are bilinear scales (an example of which has been presented above, as the Fourfold model (Berry, 1992).

Another common and thorough scale commonly employed is Kramer's theory of *Dimensional Accrual and Dissociation* (DAD). This theory suggests the existence of 3 communication strategies that explain the differences between native and adoptive cultures: idolic, symbolic and signalic; for example, from a religious point of view, idolic is seen as emotional connectiveness to symbols, up to the point where those symbols become idols themselves (for example, the statues of Ganesh in India), as opposed to symbolic, where the items used represent a higher concept (such as christian rosarios). As opposed to the 4 coping strategies of the fourfold model, none of these paths has been found to be superior to another, and Kramer doesn't present solutions for the intercultural conflict (Kramer, 2005; Kramer, 2010).

### **Stress of acculturation around the world**

The post-World War 2 research primarily focuses on minorities in the US, partly due to their scholars' dominance over the social studies field. According to the *Institute of International Education* (I.I.E) 4.2% of the students of the US higher educational system are of international origin. In this context,

PsycINFO shows 1/3 of the acculturation research to be focused on Hispanics, and 1/4 on the subcategory of Asian-Americans. Among international students, the 5 main countries of origin are all of the last category: India, China, Korea, Japan and Taiwan (Taiwan being the smallest in size and yet having more than 28.000 students studying in the US alone (Institute of International education, 2008). As such, the cultural differences result in a significant number of acculturative stressors, leading to mental issues such as depression: Korean students seem to experience particularly pronounced depressive symptoms on the CES-D scale (14.37), compared to Chinese (6.93), Japanese (7.30) and Filipino (9.72). (I.I.E, 2014; Park and Rubin, 2012), Studies have tried to indirectly link such results to acculturation, but the researchers have varied from socioeconomic status (Golding and Burnam, 1990), age (Kaplan and Marks, 1990) and social support (Ayers et al, 2009), proving to be too inconsistent for a definite answer.

Among Chinese students, the high levels of mental well-being are firmly tied to the level of interaction and support from families back home. A study discovered that the levels of stress among students can be predicted by factors such as gender and media, as well as frequency of interaction with the individual's relatives: low levels of stress have been predicted by communication via email, while phone calls have been associated with higher stress factors (Kline and Liu, 2005).

The level of acculturative stressors, as proven by a study of Taiwanese students, shows a linear decrease over time, during the first year of study with no significant variations afterwards, and, as expected, the most challenging factor was Academics. This, however only suggests that an equilibrium may be reached after a year of study, as some challenges with Homesickness and Academics persisted up to the fall of the 3<sup>rd</sup> academic year. (Ying et al, 2006).

European students in the US, however, report feeling less acculturative stress than those from Asia, Central/South America and Africa (Oyrazli et al. 2004; Yeh and Inose, 2003).

In Malaysia, the main stress factors discovered are attitude and environment, with no significant inter-gender variation. Environment, as a factor, may refer to the deprivation from familiar sources of support, communication or cultural adjustment, but also to the challenge of finding a place to live, learning how to use new transportation methods or new communication methods with family. Attitude, on the other hand, refers to the general approach to the new culture and provocations it arises; if the initial attitude towards the change is negative, the impact of acculturative stress is significantly increased and the coping mechanisms chosen by the students may have a less efficient effect (Desa et al, 2012).

In Thailand, the main factors influencing acculturative stress are length of stay, emotional intelligence as well as coping strategies. After 3 months, students living in Thailand also experienced stressors such as language, daily living, academics, financing, environment/culture, family and loneliness. These can be catalogued into 2 main fields: culture shock and perceived discrimination (Sandhu & Asbaradi, 1994). Despite that, the overall level of acculturative stress among students in Thailand is low, proving the existence of efficient coping mechanisms: approach coping (understanding and preparing oneself for an upcoming challenge), as well as avoidance coping (refusing to think realistically of the problem ahead) and the employment of means for expressing negative feelings. Here, the most significant predictors among all the variables are acceptance as well as emotional intelligence (Vergara, 2010).

Among nursing students in Australia, Salamonson reported a positive association between academic performance and the English Acculturation Scale (ELAS) in all 4 main fields of study. The main difference in stress level was found to be between years 1, 2 and year 3, the final category possibly having higher scores due to the challenges of graduation, competition for places in the new graduate program and having to decide on their future plans. Furthermore, the Sense of Coherence (SOC) proved to be an important predictor of high stress levels, as well as being negatively correlated to issues such as anxiety and depression (Eriksson & Lindstorm, 2005). This is because a student with a high level of SOC is less likely to perceive challenges as being threatening, thus coping better in said situations (He, Lopez, Leigh, 2012).

In the Elabunga Institute of the Republic of Tartastan, Russia, international students originate almost exclusively in Central Asian countries and thus, experience only moderate acculturative stress related to hate, perceived discrimination and culture shock. This result may be explained by the former Soviet Union origin of all these countries (Turkmenistan, Tadjhikistan, Kyrgyzstan, Uzbekistan as well as Russia), leading to similar cultural backgrounds. At the same time, the languages of these central Asian countries all have Turkic origins, and thus, the foreign students can be understood by the large population of natives speaking Tatar. The only perceivable stress factor is Homesickness, explained by the short time of habitation in Elabunga and by the strong family connections usually met in these countries of origin. (Nailevna, 2017).

### **Factors influencing the level of stress of acculturation**

Overall, the factors identified vary according to the country of origin as well as adoptive country. In many of the cases studied, there has been no significant difference among genders (Desa et al, 2011; Yeh and Inose, 2003;

Ying, 1996), while in others, some stress differences have been reported, especially among asian immigrants (usually, due to the difference in gender position between the 2 cultures) (Furnham and Shiekh, 1993) yet the vast majority of research papers choose to ignore the possibility or discrepancies in the results between male and female participants as insignificant.

It has been discovered that, among Korean immigrants, the level of depression is significantly prevalent per general (Park and Rubin, 2012; Portes and Rumbaut, 2006) and especially among female students (Felsten, 1998). Other factors identified in this category that lead to high depression levels, as suggested by Kuo (1984), are a shorter period spent in the US, higher rates of unemployment or poor language skills.

Another relevant factor is perceived discrimination, as shown by numerous researches (Beiser and Hou, 2006; Borrell, Kiefe, Williams, Diez-Roux and Gordon-Larsen, 2006; Gee et al, 2006; Harcourt et al. 2005). In a large study of immigrant teenagers from 13 different nations, this stressor was the main predictor for poor adaptation, exceeding any acculturation measures (Vedder, van de Vijver & Phinney, 2006).

The social-economic factor alongside discrimination, is one of the most influential stressors that leads to acculturative stress, predicting low health among minorities. Moyerman and Forman (1992) discovered, after an analysis of 49 cases that social-economic factor is the top study characteristic, adding that "Lower social-economic factor samples had sharper increases in symptomatology and conflict as they acculturated". However, this factor is largely ignored in the studies published, as underlined by Hunt et al. (2004, p. 980) "*the studies we reviewed routinely fail to seriously explore the role of socio-economic, educational and related factors*".

The period of adjustment to the new culture is another relevant factor, the stress resulting from a new environment steadily decreasing with time.

Finally, Academics is especially among international students, one of the most stressful aspects of living abroad, persisting throughout the stay along with homesickness (Ying, 2005). This includes level of language knowledge, which directly influences the academic scores as well as the level of stress among international students (He, Lopez and Leigh, 2012). Thus, students who are good at their new countries' language transition more easily to the new environment and vice versa. (Poyrazli et al, 2004)

Some researches mentioned the importance of strategies in order to cope with acculturation stress. Individual or group involvement is crucial, but institutional strategies are also important. It seems that task-oriented strategies, emotion-oriented strategies and avoidance are involved into the acculturative stress and the process of acculturation (Ra and Trusty, 2015). Social strategies

must focus in interactive activities between students from different countries, to share information and difficulties and to encourage students to ask for professional help and academic support (language, educational, curricular, etc). Good knowledge of host country language is empowering the student and knowledge of country's history and culture is also helping.

### **Conclusion**

The more research is being made, the more we discover that acculturation stress is a complex phenomenon, with many factors that can influence the evolution of such processes. Gender, depression, socio-economic factors, time of adjustment, the ability to speak foreign languages, the family cohesion and social support are important factors in developing stress of acculturation among international students. Identifying as many variables as possible, exploring emotional intelligence and ultimately, coping strategies will, hopefully, help us in better understanding international students, as well as facilitating the adaptation process and reducing the stress levels for our future generations.

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## SUICIDE THOUGHTS AMONG MEDICAL STUDENTS. A THEORETIC APPROACH

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**ABSTRACT.** Depression and suicide ideation represent a very important topic for students from medical schools. The studies proved that medical students are having higher rates of depression comparing to general population. Women are more prone to experience depression comparing to men and freshman students are more depressed as seniors. Avoiding medical and psychological assistance in case of depressed students is related to stigma, the lack of time, confidentiality and negative effects on professional life. Psychological tools are needed to be used in order to identify depression, burnout, anxiety and ideation thoughts among medical students and online intervention should be practiced. The aim of the study is to present a theoretical approach of this topic, focusing on factors influencing the suicide ideation among this population.

**Keywords:** *medical student, stress, depression, suicide thoughts*

**REZUMAT. Gânduri suicidare la studenții la medicină. O abordare teoretică.** Depresia și gândurile suicidare la studenții care urmează cursurile facultăților de medicină sunt teme des abordate. Studii au arătat faptul că studenții mediciști au scoruri ridicate ale depresiei, comparativ cu populația generală. Femeile sunt mai predispușe la a fi depresive și studenții din anul întâi mai mult decât cei din anul final. În cazul depresiei, evitarea obținerii suportului psihologic sau medical este cauzat de stigmatizare, lipsa timpului, confidențialității și efectele negative asupra vieții profesionale. Este util aplicarea instrumentelor psihologice pentru a identifica depresia în rândul studenților, precum și a anxietății, sindromului de epuizare profesională sau pentru a evidenția prezența gândurilor suicidare.

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Evaluarea online este, de asemenea, recomandată. Scopul studiului este de a prezenta un cadru teoretic, cu orientare către factorii care influențează ideea suicidară a acestei populații.

**Cuvinte cheie:** *studenți la medicină, stres, depresie, gânduri suicidare*

## **Introduction**

Medical school is a period with important psychological distress. The way students are taught to cope with it is crucial for their future professional life, due to the fact that higher rates of burnout, depression, anxiety and suicide are reported by studies. The severe process of admission for medical faculty, the intensive curricula and the demanding theoretical knowledge and practical cases are related to a lot of psychological distress among medical students and rates of depression and suicide ideation are higher comparing to general population (Dyrbye et al, 2006). Compared with suicide deaths in other professions, the rates are 200 % higher in female physicians and 40 % higher in male physicians (Schernhammer and Colditz, 2004).

Medical students possess plenty of qualities that at a first glance wouldn't be associated with suicide or depression, as compared with other students from different areas of study those in medicine have the highest score in extraversion and agreeableness (Lievens et al, 2002), but the environment also has a powerful role in determining the future of an individual, in some cases regardless of one's strong suits. The setting medical school offers can be considered a risk factor for suicide as it implies long amounts of time dedicated to studying, high levels of stress, in a very competitive setting, where failure is blamed and rarely mentioned; making mistakes in managing their time could severely affect the students' outcome: *medical students with low scores of conscientiousness and high scores of gregariousness and excitement-seeking have very low chances of succeeding in their exams (Ludwig et al, 2015).*

### **The phenomenon of suicide ideation in studies. From student to physician**

Medical students' scores of depression are 15–30 % higher than those of peers of similar age and level of education (Goebert et al, 2009). That is why, high rates of dropping out are registered by medical students (Gavrilescu et al, 2017a; Gavrilescu et al, 2017b).

A study of Dahlin et al (2005) revealed that the prevalence of depression among medical students was 12.9% and the obtained scores were 16.1% for women and 8.1% for men. A rate of 2.7% presented suicide ideation in one of the previous years. Another study including students from seven medical schools from USA showed that depression was identified for 49.6% of students and 11.2% reported suicide ideation. Burnout was the main factor associated with depression and suicide thoughts in this research. (Dyrbye et al, 2008).

Hays and all, in a study developed between 1989 and 1994 reported different results. The researcher identified that more men than women committed suicide and almost half of students were registered in the third year of study. Almost 40% left notes and more than 80% of suicide cases were having a psychiatric history (Hays et al, 1996).

*Advancing in the final years in medical school does not correlate neither to an ability formed over time to manage stress better nor to a better mental state, as when students from the first year of medical school were compared to those in the third year it was observed that the number of students with risk of depression was higher in the final years (39 % in the third year) than at the beginning of their studies: 28.4 % in the first year. (Ludwig et al, 2015)*

*The medical training as a student is the ground stone of the next stage that follows in the pursuit of becoming a doctor: the residency. Although the responsibilities and the work hours increase during residency, the depression rate was found to be higher among medical students when compared to residents, which again indicates the vulnerabilities of those located at the beginning of their medical journey. (Geobert et al, 2009)*

*But the latter does not mean that residents are in a better situation: a study in which were analyzed the causes of death of medical residents in the United States from 2000 to 2014 places suicide as the second reason for death of resident doctors and as the first reason for the death of male residents, with higher risks at the beginning of the academic years and after winter holidays. (Yaghour et al, 2017)*

*Just as it happens with students in medical school, moving forward with the training in the residency does not mean for the former students (now newly doctors) an upgrade of their well-being: if at the beginning of the first year in residency the rates of burnout, depression and sleep deprivation have certain values, at the end of the same year the data significantly changes for the worst, as chronic sleep deprivation increased from 9% to 43%, prevalence for depression changed from 4.3% to 29.8%, the most severe alteration being represented by the percentage of residents with burnout, which if at the beginning was 4.3% in less than one year it managed to reach 55.3 %. (Rosen et al, 2009)*

### ***Universities' strategies – curricula***

*But medical schools can turn from risk factors to healers, and one approach is embracing the pass-fail grading system, which is implemented by many medical schools in the United States, especially in the preclinical years. Students who are evaluated with pass-fail have lower levels of stress and an improved mental state by comparison with their peers who are evaluated with grades. (Reed et al, 2011)*

*A powerful example comes from the University of Virginia, where after the comparison between students who were graded and others who were evaluated using pass-fail system it was observed that students from the pass-fail class had lower levels of stress, were more satisfied about the quality of their education and their personal lives were highly improved, while the performance between the two classes wasn't affected by the evaluation method. (Bloodgood et al, 2009)*

*When Mayo Medical School changed the grading system for the first year to pass-fail, the effect was that students were under lower levels of stress, had a better collaboration with each other and the general mood was improved (Rohe et al, 2006), all these aspects being connected to the amount of suicidal thoughts.*

*A study conducted at Harvard University for more than 70 years shows that one of the most important factors in one's life quality and longevity is represented by the relationships and the connection to other people, as this influences the happiness of the person and the quality of the interaction can protect the general state of health and also has a powerful impact on the mental state of the person. (Vaillant, 2012) The findings of the study can also help medical schools and medical students alike, as it inspires a powerful message: only another person can lift one who's fallen. Student counseling is a widely accepted method with great benefits, but when it is combined with faculty members who are educated about the students' stress levels and feelings, together with a specific curriculum and study materials so that students have a better understanding about what they are experiencing the results can be amazing: the number of students with depressive symptoms decreases to half and those with suicidal ideation decrease 10 times. (Thompson et al, 2010)*

*Hominum causa (omne) ius constitutum est – (every) law has been created for the benefit of men - and sometimes laws offer the support needed to fix otherwise unsolvable issues. The State of Missouri is the first one in the country to introduce a law that addresses issues such as suicide and depression in the medical field – Missouri House Bill 569, named „Show-Me Compassionate Medical Education Act” - which received a powerful support from the community (including medical professionals, professors and even parents of a medical student who died by suicide three weeks before graduation). The bill encourages research*

*in the field of mental health in order to find solutions to the risks faced in the medical school, it proposes August 28 as the „Show-Me Compassionate Medical Education Day" and it creates the "Show-Me Compassionate Medical Education Research Project Committee" with the purpose to study the stress in medical schools and to find ways to decrease the level and also to gather data from the students regarding their mental health.*

*Taking care of students shouldn't end with the graduation of medical school. A great number of resident doctors suffer from sleep deprivation, and research suggests that sleep deprivation (present in 85.9% of the evaluated doctors) and chronic sleep deprivation (present in 63.2% of the cases) can be associated with depressive symptoms. (Al-Maddah et al, 2015)*

*The cause of the many struggles faced by doctors is very difficult to quantify, but more approaches try to improve the current situation: one example comes from the University of California, San Diego School of Medicine which in 2009 launched an initiative aimed at raising awareness about depression and trying to prevent suicide, where the focus was not only on students but also on residents and faculty physicians. The program consists of two stages, one is represented by online screenings done with specialized software (made by the American Foundation for Suicide Prevention), while the second one is represented by an educational campaign which aims to inform about depression, risk of suicide and burnout; the successful initiative was welcomed by the medical community and it represents one of the first programs of this kind. (Moutier et al, 2012)*

*Both Mayo Clinic and Stanford University launched initiatives promoting physicians' well-being: the Stanford approach is meant to pull away from the doctors' shoulders the burdens of certain daily tasks that can't be completed by them due to many working hours, while the Mayo Clinic Physician Well-Being Program is designed to promote wellness in all aspects of the doctors' life (both personal and professional) with the help of physicians from multiple specialties.*

### **Intervention strategies – online tools**

From the available information two important questions arise: what makes the future medical professionals (who need to alleviate the suffering of others) feel like they need to end their lives and most importantly how can the cause be diminished? Even those who heal need sometimes to be healed.

The barriers identified in avoiding medical treatment are the lack of time, stigma, lack of confidentiality and a potential negative impact on professional life that is why developing programs to online survey of medical students are needed. An individualized and anonymous web-based program developed by Downs et al (*the Healer Education Assessment and Referral (HEAR)*

*Program*) showed that an online tool is effective in detecting several medical students with suicidal ideation who were not in psychiatric treatment, and succeed in engaging them in mental health treatment. (Downs et al, 2004) In a study one of the authors identified that also cost, fear of documentation on academic record and fear of unwanted intervention were reported as barriers in looking for professional help (Givens and Tjia, 2002) so depression as the main cause for suicide ideation remains undertreated.

*The value of human life cannot be resumed in percentages in a study or comprehended in statistics, but what all the research suggests is that a great problem exists regarding the pressure put on the mental health of medical students and all approaches should be considered in order to change the status quo on how reaching for help is perceived, not as a weakness but as a sign of great strength. The principle of non-maleficence is as important now as it was during the time the „Hippocratic Corpus,, was written, but in the present along with the care for the patient a new dimension of the principle must emerge: also do not harm the medical professional, as the rewards for success in alleviating this issue are described in a several-thousand-year-old saying: „He who saves a single life, saves the world entire.”*

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## THE VALIDITY AND FACTOR STRUCTURE OF *STRENGTH OF MOTIVATION FOR MEDICAL STUDENTS - REVISED QUESTIONNAIRE* – EXPLORATORY FACTOR ANALYSIS ON ROMANIAN STUDENTS

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**ABSTRACT.** Instruments that are meant to quantify the measurement of the strength of motivation in medical schools try to determine how the students start and pursue their medical training. Strength of motivation for medical school was defined as the student's readiness to start and continue medical training regardless of setbacks, disappointments, sacrifices or misfortune. **Aim:** To validate a revised version of *Strength of Motivation for Medical Students Questionnaire* (SMMS) and to explore its relation to a few variables that are related to this concept. **Methods:** Exploratory factor analysis was used to verify the factor structure of SMMS-Revised of Kusurkar et al. from 2011 in a sample of 601 medical students from all 6 years of study. It was used as a method of factor extraction Principal components analysis and as a method of factor rotation both VARIMAX and Direct Oblimin but we kept the solution in which was used the VARIMAX rotation because the results were similar. **Results:** The SMMS-R is a good and reliable tool with a good internal consistency (alpha Chronbach = 0.797) that can measure the level of motivation of medical students. The scores obtained by our participants showed a high level of motivation both for the total motivation score and also for the scores of the three subscales. We found no significant correlation with the total score of *Perceived Stress Scale - 10* by Cohen & Williamson in 1988 and a negative correlation ( $r = -.095$ ,  $p = .020$ ) with the total score at *Beck Depression Inventory* - Beck et al, 1961. **Conclusion:** The SMMS-R is valid for use in medical students but we advise that this tool should only be used for research purposes or for evaluation of medical students after they have been admitted into the medical field.

**Keywords:** strength of motivation, validation, exploratory analysis, medical training

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**REZUMAT. Validitatea și structura factorului de puterea a motivării la studenții la medicină – Chestionar revizuit – analiza factorială exploratorie la studenții români.** Instrumentele ce au ca scop măsurarea nivelului de intensitate al motivației studenților medici încearcă să determine modul în care studenții încep și apoi își continuă parcursul academic în domeniul medical. Intensitatea motivației studenților medici a fost definită ca reprezentând disponibilitatea studenților de a începe și de a continua pregătirea în domeniul medical indiferent de obstacolele întâmpinate, dezamăgiri, sacrificii sau ghinioane. **Obiectiv:** Validarea versiunii revizuite a Chestionarului de Intensitate a Motivației Studenților Medici (SMMS) și explorarea relației acestuia cu o serie de variabile legate de acest concept. **Metode:** Pentru a verifica structura factorială a SMMS-R (Kusurkar et al., 2011) a fost folosită analiza factorială exploratorie pe un eșantion format din 601 studenți medici ce erau înscriși în cei șase ani de studii. Ca metodă de extragere a factorilor a fost folosită analiza componentelor principale (Principal components analysis) și ca metodă de rotație a factorilor s-au folosit atât VARIMAX cât și Direct Oblimin dar a fost reținută soluția în care s-a folosit metoda VARMAX deoarece rezultatele din ambele soluții erau similare. **Rezultate:** Chestionarul SMMS-R reprezintă o unealtă de evaluare bună și de încredere cu o consistență internă bună (alpha Chronbach = 0.797) ce poate măsura nivelul de motivație al studenților medici. Scorurile obținute de către participanții noștri denotă un nivel ridicat al motivației atât pentru scorul total obținut cu ajutorul acestui chestionar cât și pentru scorurile celor trei subscale ale instrumentului. Nu s-au găsit corelații semnificative statistic cu scorul total obținut la Scala Nivelului de Stres Perceput (*Perceived Stress Scale - 10*, Cohen & Williamson, 1988) însă a fost evidențiată o corelație negativă ( $r = -.095$ ,  $p = .020$ ) cu scorul total obținut la Inventarul de Depresie (*Beck Depression Inventory*, Beck et al, 1961). **Concluzie:** Chestionarul SMMS-R este o măsură validă ce poate fi folosită cu studenții medici însă se recomandă ca acest instrument să fie folosit numai în scop de cercetare sau pentru evaluarea studenților medici după ce aceștia au fost admiși deja la studii în domeniul medical.

**Cuvinte cheie:** intensitatea motivației, validare, analiză exploratorie, pregătire medicală

## Introduction

Motivation is an important factor for academic achievements and success, especially for medical students where important factors are mixing: a long period of time for formation, close relationship and interaction with patients, illness and sufferance and the importance of good academic results that assure a better job.

The original instrument for the measurement of motivation of the students who choose a medical career is *The Strength of Motivation for Medical School-Revised* (SMMS-R) questionnaire, developed by Nieuwhof et al. (2004) and revised by Kusurkar et al. in 2011 and reloaded in 2017.

The SMMS-R has been used to evaluate the relationship between demographic variables (age, gender and educational background) and students' motivation for medical school. (An et al, 2017; Kusurkar et al, 2010).

As the Nieuwhof et al developed in 2002 (unpublished, first involving only freshman students) and presented in 2004, this tools was not designed to be used as an instrument of evaluation for admission to medical school but “to carry out studies to uncover relationships between motivation, teaching-learning processes and academic success.” (Nieuwhof et al., 2004)

The aim of this study is to validate a revised version of *Strength of Motivation for Medical Students Questionnaire* (SMMS) and to explore its relation to a few variables that are related to this concept.

## **Material And Methods**

### ***Instruments***

SMMS-R intended to measure the strength of motivation of students to start and pursue medical training. In this questionnaire the authors did not investigate the quality of this concept but the strength of it. Strength of motivation for medical school was defined as the student's readiness to start and continue medical training regardless setbacks, disappointments, sacrifices or misfortune (Nieuwhof et al, 2004). The results they obtained showed that this questionnaire was constructed for evaluative purposes and not to be a criterion for selecting medical students. The reliability of the original version of SMMS is good (Cronbach's alpha = .79) and the test-retest reliability (correlation = 0.71).

In our study we used the revised version of this instrument (SMMS-R, Kusurkar et al, 2011) that has 15 items instead of 16, as the original version did. Regarding the scoring of the SMMS-R, each item could obtain a score of 1, 2, 3, 4 or 5 depending on the answer chosen by the participant, 1 meaning strong disagreement with the statement, 2 – moderate disagreement, 3 – neutral, 4- moderate agreement and 5 – strong agreement. The items 2, 4, 8, 9, 11, 13 and 14 are reverse scored. Eight of the items of this scale suggest a positive relation to motivation (e.g., “I would always regret my decision if I hadn't availed myself to the opportunity to study medicine”), while the other

seven items are reverse scored and suggest a negative relation to motivation (e.g., “If studying took me more than an average of 60 hours a week, I would seriously consider quitting”).

SMMS-R contains three subscales: *willingness to sacrifice* that includes items 5, 7, 9, 10 and 12, *readiness to start* with items 1, 3, 6, 11 and 15 and *persistence* composed of items 2, 4, 8, 13 and 14. The score on each subscale can be used separately or the scores on three subscales can be summed up to give the overall *Strength of Motivation for Medical School*. The maximum total score that can be obtained is 75 and the minimum total score is 15. For each subscale the maximum possible score for each subscale is 25 and the minimum possible score is 5.

The first subscale named *willingness to sacrifice*, measures the willingness of a student to sacrifice for the medical education. The second subscale, *readiness to start*, is a measure of a student’s readiness and will to enter medical study and the third subscale, *persistence*, measures a student’s persistence in medical study in spite of unfriendly circumstances during or after the study.

The authors of this instrument advised that this scale is not meant to be used as a measure for selecting students for admission into the medical study and they recommend that this questionnaire to be used only for research purposes or for evaluation of medical students after they have been admitted into the medical field.

In order to test the relationship of SMMS-R with other instruments, we also administered to the participants the *Perceived Stress Scale - 10* (PSS - 10) (Cohen & Williamson, 1988) which measures the perceived stress on a scale from 0 (never) to 4 (very often). The authors of this instrument stated that this is not a diagnostic tool. The high scores obtained by the participants represent a high risk for developing a stress related disease. The alpha Chronbach score for this scale is 0.850.

We also administered the *Beck Depression Inventory* (BDI - Beck et al, 1961) which is one of the most used instrument in assessing depression. The instrument contains a number of 21 items, the answers are rated on a 4 step Likert scale from 0 to 3, the subjects having to choose the answer that matches their opinion. It contains 21 symptoms of the most common psychological and psychiatric symptomatology: mood, pessimism, sense of failure, lack of satisfaction, guilty feelings, sense of punishment, self-hate, self-accusations, self-punitive wishes, crying spells, irritability, social withdraw, indecisiveness, body image, work inhibition, sleep disturbance, fatigability, loss of appetite, weight loss, somatic preoccupations and loss of libido. The alpha Chronbach score for this inventory is 0.874.

### ***Participants***

At this study have participated a number of 650 students and the questionnaires were filled in between July - September 2016. The data we included in this research refers to 601 students, those who filled in completely the questionnaires (92.46% response rate). All the participants are studying General Medicine in the University of Medicine and Pharmacy “Grigore T. Popa” of Iasi, Romania, and are coming from all 6 years of study.

Regarding the year of the study of our participant sample, 106 (17.64%) of our subjects were enrolled in the first year at the time they filled in the questionnaire, 96 (15.97%) were in the second year, 112 (18.64%) were in the third year, 110 (18.30%) were in the fourth year, 75 (12.48%) were in the fifth year and 102 (16.97%) were in the sixth year of study. 466 (77.54%) were living in an urban area and 134 (22.30%) in a rural area, 163 (27.12%) of the subjects are males and 438 (72.88%) are females.

### ***Ethical approval***

The present study was conducted in accordance with the Declaration of Helsinki and ethical approval was granted by the university Research Ethics Committee. Informed consent was obtained from the subjects prior the beginning of the study and they were also informed about the goal of the study. Students were also informed that they may address to two psychologists working with Center of Career Counseling to receive psychological support.

### ***Statistical analysis***

The statistical analysis was performed using SPSS Statistics v23.0.0 for MAC.OSX and for the factor analysis we used Exploratory Factor Analysis which is a statistical approach for determining the correlation among the variables in a dataset and which provides a factor structure or a grouping of variables based on strong correlations. The statistical difference was defined as  $p < 0.05$ .

### ***Results***

The reliability coefficient for the three dimensions of the SMMS-R is: *willingness to sacrifice* (5 items) we obtained an alpha Chronbach = 0.708; *readiness to start* (5 items) alpha Chronbach – 0.657 and *persistence* (5 items) with an alpha Chronbach of 0.599. Even though the results for the reliability analysis can be considered a bit low, other authors using this scale obtained similar results regarding the alpha Chronbach of the three dimensions: 0.70, 0.67 respectively 0.55 (Kusurkar et al, 2011).

Because the lowest scores are on the *persistence* scale, we recommend prudence in interpreting the results for this subscale. Despite this, the alpha Chronbach for the the total score of SMMS-R is 0.797 which can be considered a good measure of internal consistency.

Also, the results we obtained showed that our subjects have a high level of motivation  $M = 55.02 \pm 9.19$  (the maximum score being 75). The means for the three factors are:  $18.21 \pm 3.89$  for *willingness to sacrifice*,  $18.99 \pm 4.04$  for *readiness to start* and  $17.81 \pm 3.76$  *persistence*, also indicated a high level of motivation for all of them (the maximum score being 25 for all subscales). The higher the score is, the greater is the strength of motivation.

For the Exploratory Factor Analysis, it was used as a method of factor extraction Principal components analysis and as a method of factor rotation it was used both VARIMAX and the Direct Oblimin methods because according to the theory, the factors of this questionnaire should correlate between them. We then compared the factorial solutions obtained and we noticed that they do not differ that much so we kept the solution in which it was used the VARIMAX rotation.

The results presented in *Table 1* proves that there are a lot of sets of correlations above 0.30 so we can conclude that using Exploratory Factor Analysis for these variables is appropriate. Also, the value of the determinant is above 0.00001 (Determinant = .046) so we can draw the conclusion that there is no multicollinearity or singularity among the variables we considered for the analysis.

**Table 1.** Correlation Matrix

| Items | I1    | I2    | I3    | I4    | I5    | I6    | I7    | I8    | I9    | I10   | I11   | I12   | I13   | I14   | I15   |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1     | 1.000 | -.025 | .325  | -.224 | .335  | .340  | .300  | -.066 | -.152 | .233  | -.367 | .222  | -.177 | -.106 | .218  |
| 2     | -.025 | 1.000 | -.072 | .170  | -.049 | -.131 | -.074 | .243  | .161  | -.066 | .142  | -.007 | .255  | .153  | -.081 |
| 3     | .325  | -.072 | 1.000 | -.292 | .295  | .283  | .284  | -.153 | -.161 | .265  | -.312 | .208  | -.116 | -.049 | .227  |
| 4     | -.224 | .170  | -.292 | 1.000 | -.310 | -.267 | -.232 | .197  | .397  | -.211 | .338  | -.257 | .289  | .135  | -.096 |
| 5     | .335  | -.049 | .295  | -.310 | 1.000 | .364  | .505  | -.099 | -.308 | .380  | -.378 | .330  | -.189 | -.069 | .161  |
| 6     | .340  | -.131 | .283  | -.267 | .364  | 1.000 | .426  | -.105 | -.253 | .253  | -.428 | .294  | -.243 | -.157 | .200  |
| 7     | .300  | -.074 | .284  | -.232 | .505  | .426  | 1.000 | -.047 | -.245 | .296  | -.344 | .375  | -.151 | -.099 | .183  |
| 8     | -.066 | .243  | -.153 | .197  | -.099 | -.105 | -.047 | 1.000 | .295  | -.114 | .230  | -.030 | .267  | .224  | -.078 |
| 9     | -.152 | .161  | -.161 | .397  | -.308 | -.253 | -.245 | .295  | 1.000 | -.318 | .396  | -.190 | .346  | .142  | -.058 |
| 10    | .233  | -.066 | .265  | -.211 | .380  | .253  | .296  | -.114 | -.318 | 1.000 | -.371 | .348  | -.187 | -.034 | .166  |
| 11    | -.367 | .142  | -.312 | .338  | -.378 | -.428 | -.344 | .230  | .396  | -.371 | 1.000 | -.209 | .303  | .122  | -.201 |
| 12    | .222  | -.007 | .208  | -.257 | .330  | .294  | .375  | -.030 | -.190 | .348  | -.209 | 1.000 | -.168 | -.110 | .169  |
| 13    | -.177 | .255  | -.116 | .289  | -.189 | -.243 | -.151 | .267  | .346  | -.187 | .303  | -.168 | 1.000 | .370  | -.028 |
| 14    | -.106 | .153  | -.049 | .135  | -.069 | -.157 | -.099 | .224  | .142  | -.034 | .122  | -.110 | .370  | 1.000 | .010  |
| 15    | .218  | -.081 | .227  | -.096 | .161  | .200  | .183  | -.078 | -.058 | .166  | -.201 | .169  | -.028 | .010  | 1.000 |

The results we obtained at the KMO and Barlett's Test s show that for the sphericity test Barlett  $\chi^2 (105) = 1822.890, p=.000$  which means that the correlation matrix differs significantly from the identity matrix in which the variables would not correlate with each other, this proves that our variables are appropriate / adequate for factorization. The KMO index = .861 suggest that this set of variables is very good for the exploratory factor analysis.

After inspecting the lower half of *Table 2* (the principal diagonal of the Anti-image Correlation field) we noticed that there are no values under 0.50. Considering the evaluation criterion of the KMO Coefficients proposed by Kaiser and Rice, these coefficients are really good, which shows that they are adequate for the factorial analysis.

**Table 2.** Anti-image Matrices

|  | I1     | I2                | I3                | I4                | I5                | I6                | I7                | I8                | I9                | I10               | I11               | I12               | I13               | I14               | I15               |                   |
|--|--------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Anti-image Covariance                        | Item1  | .748              | -.047             | -.118             | .026              | -.077             | -.081             | -.030             | -.029             | -.040             | -.012             | .110              | -.020             | .037              | .035              | -.082             |
|  | Item2  | -.047             | .879              | -.002             | -.064             | -.030             | .043              | .025              | -.130             | -.011             | .006              | -.009             | -.057             | -.120             | -.036             | .058              |
|  | Item3  | -.118             | -.002             | .767              | .118              | -.036             | -.045             | -.051             | .074              | -.043             | -.071             | .049              | -.009             | -.028             | -.018             | -.091             |
|  | Item4  | .026              | -.064             | .118              | .723              | .065              | .020              | -.017             | -.022             | -.161             | -.038             | -.056             | .092              | -.066             | -.004             | -.017             |
|  | Item5  | -.077             | -.030             | -.036             | .065              | .621              | -.042             | -.194             | .000              | .052              | -.106             | .043              | -.047             | .007              | -.022             | .001              |
|  | Item6  | -.081             | .043              | -.045             | .020              | -.042             | .674              | -.130             | -.026             | .014              | .011              | .128              | -.063             | .040              | .046              | -.049             |
|  | Item7  | -.030             | .025              | -.051             | -.017             | -.194             | -.130             | .630              | -.045             | .033              | -.009             | .041              | -.127             | -.025             | .025              | -.025             |
|  | Item8  | -.029             | -.130             | .074              | -.022             | .000              | -.026             | -.045             | .815              | -.128             | .001              | -.063             | -.037             | -.066             | -.117             | .040              |
|  | Item9  | -.040             | -.011             | -.043             | -.161             | .052              | .014              | .033              | -.128             | .675              | .103              | -.106             | -.003             | -.106             | .010              | -.037             |
|  | Item10 | -.012             | .006              | -.071             | -.038             | -.106             | .011              | -.009             | .001              | .103              | .720              | .107              | -.157             | .024              | -.046             | -.033             |
|  | Item11 | .110              | -.009             | .049              | -.056             | .043              | .128              | .041              | -.063             | -.106             | .107              | .612              | -.049             | -.063             | .016              | .048              |
|  | Item12 | -.020             | -.057             | -.009             | .092              | -.047             | -.063             | -.127             | -.037             | -.003             | -.157             | -.049             | .749              | .035              | .045              | -.061             |
|  | Item13 | .037              | -.120             | -.028             | -.066             | .007              | .040              | -.025             | -.066             | -.106             | .024              | -.063             | .035              | .705              | -.221             | -.042             |
|  | Item14 | .035              | -.036             | -.018             | -.004             | -.022             | .046              | .025              | -.117             | .010              | -.046             | .016              | .045              | -.221             | .829              | -.042             |
|  | Item15 | -.082             | .058              | -.091             | -.017             | .001              | -.049             | -.025             | .040              | -.037             | -.033             | .048              | -.061             | -.042             | -.042             | .888              |
| Anti-image Correlation                       | Item1  | .889 <sup>a</sup> | -.058             | -.156             | .036              | -.112             | -.114             | -.044             | -.038             | -.056             | -.016             | .163              | -.027             | .051              | .044              | -.101             |
|  | Item2  | -.058             | .782 <sup>a</sup> | -.002             | -.080             | -.041             | .055              | .033              | -.154             | -.014             | .007              | -.012             | -.071             | -.152             | -.042             | .066              |
|  | Item3  | -.156             | -.002             | .883 <sup>a</sup> | .159              | -.053             | -.063             | -.073             | .094              | -.060             | -.096             | .071              | -.012             | -.038             | -.023             | -.110             |
|  | Item4  | .036              | -.080             | .159              | .874 <sup>a</sup> | .097              | .029              | -.025             | -.029             | -.231             | -.052             | -.084             | .125              | -.092             | -.006             | -.021             |
|  | Item5  | -.112             | -.041             | -.053             | .097              | .881 <sup>a</sup> | -.064             | -.309             | .001              | .081              | -.159             | .069              | -.068             | .011              | -.031             | .001              |
|  | Item6  | -.114             | .055              | -.063             | .029              | -.064             | .900 <sup>a</sup> | -.199             | -.034             | .021              | .015              | .199              | -.089             | .058              | .061              | -.063             |
|  | Item7  | -.044             | .033              | -.073             | -.025             | -.309             | -.199             | .855 <sup>a</sup> | -.063             | .050              | -.013             | .066              | -.185             | -.037             | .034              | -.034             |
|  | Item8  | -.038             | -.154             | .094              | -.029             | .001              | -.034             | -.063             | .796 <sup>a</sup> | -.172             | .001              | -.090             | -.047             | -.087             | -.143             | .048              |
|  | Item9  | -.056             | -.014             | -.060             | -.231             | .081              | .021              | .050              | -.172             | .848 <sup>a</sup> | .148              | -.165             | -.005             | -.154             | .014              | -.047             |
|  | Item10 | -.016             | .007              | -.096             | -.052             | -.159             | .015              | -.013             | .001              | .148              | .868 <sup>a</sup> | .161              | -.214             | .034              | -.059             | -.042             |
|  | Item11 | .163              | -.012             | .071              | -.084             | .069              | .199              | .066              | -.090             | -.165             | .161              | .889 <sup>a</sup> | -.073             | -.096             | .022              | .065              |
|  | Item12 | -.027             | -.071             | -.012             | .125              | -.068             | -.089             | -.185             | -.047             | -.005             | -.214             | -.073             | .852 <sup>a</sup> | .049              | .058              | -.075             |
|  | Item13 | .051              | -.152             | -.038             | -.092             | .011              | .058              | -.037             | -.087             | -.154             | .034              | -.096             | .049              | .822 <sup>a</sup> | -.289             | -.054             |
|  | Item14 | .044              | -.042             | -.023             | -.006             | -.031             | .061              | .034              | -.143             | .014              | -.059             | .022              | .058              | -.289             | .726 <sup>a</sup> | -.049             |
|  | Item15 | -.101             | .066              | -.110             | -.021             | .001              | -.063             | -.034             | .048              | -.047             | -.042             | .065              | -.075             | -.054             | -.049             | .857 <sup>a</sup> |
| <i>a. Measures of Sampling Adequacy(MSA)</i> |        |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |

As it is presented in *Table 3*, factor 1 explains 27.92%, factor 2 explains 10.96% and factor 3 explains 7.03% of the items' variance. In total, the three factors explain 45.92% of the items' total variance.

**Table 3.** Total Variance Explained

| Component   | Initial Eigenvalues |               |              | Extraction Sums of Squared Loadings |               |              | Rotation Sums of Squared Loadings |               |              |
|---|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
|   | Total               | % of Variance | Cumulative % | Total                               | % of Variance | Cumulative % | Total                             | % of Variance | Cumulative % |
| 1   | 4.189               | 27.924        | 27.924       | 4.189                               | 27.924        | 27.924       | 3.150                             | 21.003        | 21.003       |
| 2   | 1.645               | 10.964        | 38.888       | 1.645                               | 10.964        | 38.888       | 2.198                             | 14.652        | 35.655       |
| 3   | 1.056               | 7.038         | 45.927       | 1.056                               | 7.038         | 45.927       | 1.541                             | 10.271        | 45.927       |
| 4   | .999                | 6.662         | 52.589       |                                     |               |              |                                   |               |              |
| 5   | .871                | 5.807         | 58.396       |                                     |               |              |                                   |               |              |
| 6   | .822                | 5.482         | 63.878       |                                     |               |              |                                   |               |              |
| 7   | .781                | 5.205         | 69.083       |                                     |               |              |                                   |               |              |
| 8   | .731                | 4.874         | 73.957       |                                     |               |              |                                   |               |              |
| 9   | .707                | 4.717         | 78.674       |                                     |               |              |                                   |               |              |
| 10  | .624                | 4.158         | 82.831       |                                     |               |              |                                   |               |              |
| 11  | .606                | 4.043         | 86.874       |                                     |               |              |                                   |               |              |
| 12  | .546                | 3.639         | 90.513       |                                     |               |              |                                   |               |              |
| 13  | .507                | 3.379         | 93.893       |                                     |               |              |                                   |               |              |
| 14  | .482                | 3.213         | 97.106       |                                     |               |              |                                   |               |              |
| 15  | .434                | 2.894         | 100.000      |                                     |               |              |                                   |               |              |
| <i>Extraction Method: Principal Component Analysis.</i> |                     |               |              |                                     |               |              |                                   |               |              |

Regarding the percent of the no redundant residuals greater than 0.05, in our case this percent was of 60%. Normally, this value should be under 50%. So, we can conclude that the three factor model is somehow adequate for our data.

*Table 4* presents the way in which the items group in factors (in the analysis in which we used the Direct Oblimin method of factor rotation, the results in the Pattern Matrix and Structure Matrix are almost identical). Factor 1 groups items 5, 7, 12, 10, 6, 4, factor 2 groups items 13, 8, 2, 14, 9 and factor 3 groups items 15, 3 and 1.

**Table 4.** Rotated Component Matrix

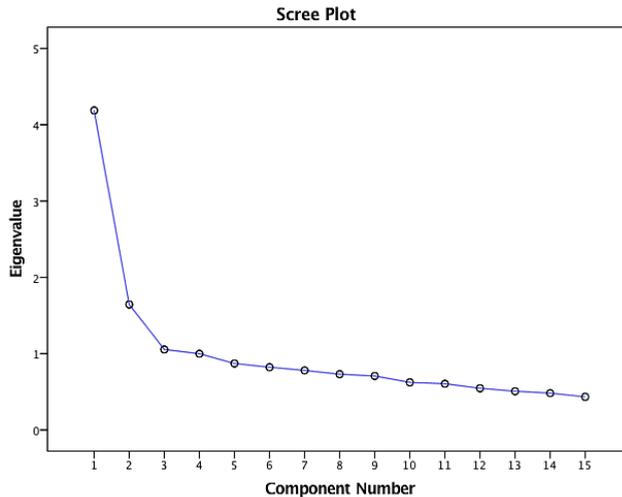
| Items  | Component |      |      |
|--|-----------|------|------|
|  | 1         | 2    | 3    |
| Item5  | .721      |      |      |
| Item7  | .699      |      |      |
| Item12   | .662      |      |      |
| Item10   | .597      |      |      |
| Item6  | .549      |      |      |
| Item11   | -.505     |      |      |
| Item4  | -.426     | .418 |      |
| Item13   |           | .690 |      |
| Item8  |           | .657 |      |
| Item2  |           | .575 |      |
| Item14   |           | .571 |      |
| Item9  | -.441     | .524 |      |
| Item15   |           |      | .755 |
| Item3  |           |      | .571 |
| Item1  | .440      |      | .448 |
| <i>Extraction Method: Principal Component Analysis.</i>    |           |      |      |
| <i>Rotation Method: Varimax with Kaiser Normalization.</i> |           |      |      |
| <i>a. Rotation converged in 5 iterations.</i>              |           |      |      |

Compared to the way the items of this questionnaire have grouped in the original scale, our analysis shows that there are slight changes regarding the manner in which the items form the three factors. Regarding the first factor of the questionnaire, *willingness to sacrifice*, our results show that it contains 2 items from the *readiness to start* factor and one item from persistence, the factor readiness to start has remained with only three items instead of five and the third factor, *persistence* contains also one item from the *willingness to sacrifice* scale. The comparative results are presented in *Table 5*.

**Table 5.** Comparative analysis of the factors

| Original scale                  |                           |                    | Our results                     |                           |                    |
|---------------------------------|---------------------------|--------------------|---------------------------------|---------------------------|--------------------|
| <i>Willingness to sacrifice</i> | <i>Readiness to start</i> | <i>Persistence</i> | <i>Willingness to sacrifice</i> | <i>Readiness to start</i> | <i>Persistence</i> |
| Item 5                          | Item 1                    | Item 2             | Item 5                          | Item 15                   | Item 13            |
| Item 7                          | Item 3                    | Item 4             | Item 7                          | Item 3                    | Item 8             |
| Item 9                          | Item 6                    | Item 8             | Item 12                         | Item 1                    | Item 2             |
| Item 10                         | Item 11                   | Item 13            | Item 10                         |                           | Item 14            |
| Item 12                         | Item 15                   | Item 14            | Item 6                          |                           | Item 9             |
|                                 |                           |                    | Item 11                         |                           |                    |
|                                 |                           |                    | Item 4                          |                           |                    |

From the Scree Plot graph (*Figure 1*) it can be observed that starting from the fourth factor comes a plateau and most authors suggest that in Exploratory Factor Analysis it should be extracted the number of factors that can be observed before the beginning of this plateau, in our case, the number is three so this proves that the items of instrument group in three factors, even if some factors contain a higher number of items than others.



**Figure 1.** Scree Plot

Concerning the relationship of this scale with other instruments, the total score of SMMS-R does not correlate with the total score of *Perceived Stress Scale - 10* (PSS - 10) developed by Cohen & Williamson (1988), one of the instruments that we used in our study, but it does have a modest correlation ( $r = -.095$ ,  $p = .020$ ) with the total score at *Beck Depression Inventory* (BDI - Beck et al, 1961), one of the most used instruments for the assessment of depression.

## Conclusions

The results we obtained show that *The Strength of Motivation for Medical School - Revised Questionnaire* is a good and reliable tool that can measure the level of motivation of medical students to start and pursue medical training. The participants in our study have a high level of motivation when it comes to the total motivation score and also for the scores of the three subscales.

This instrument has a good internal consistency for the the total score (alpha Chronbach = 0.797) and acceptable for the three dimensions of the SMMS-R: *willingness to sacrifice* (alpha Chronbach = 0.708); *readiness to start* (alpha Chronbach = 0.657) and *persistence* (alpha Chronbach = 0.599), even though we recommend prudency in interpreting the results for the third subscale, persistence.

The Exploratory Factor Analysis proved that regardless of the method of factor rotation that it was used, VARIMAX or the Direct Oblimin method, we obtain similar factorial solutions because according to the theory, the factors of this questionnaire correlate between them. Even though the items did not group in factors as the ones in the original questionnaire, our results prove that there are slight changes that do not influence the quality of this questionnaire to measure the three dimensions of the strength of motivation for medical school.

Regarding the relationship of this questionnaire with other instruments we found no significant correlation with the total score of *Perceived Stress Scale - 10* (Cohen & Williamson, 1988). The total score of SMMS-R did correlate negatively ( $r = -.095$ ,  $p = .020$ ) with the total score at *Beck Depression Inventory (BDI - Beck et al, 1961)*, suggesting that the more depressed a student will feel, the less motivated they will be in pursuing their medical training.

Just like the authors of this instrument we also advised that this scale to not be used as a measure for selecting students for admission into the medical study but only to be used for research purposes or for evaluation of medical students after they have been admitted into the medical field.

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## TECHNICAL RISK PROFESSIONAL ASSESSMENT METHOD IMPLEMENTED IN SMALL AND MEDIUM-SIZED ENTREPRISES (SMEs)

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**SUMMARY.** This paper presents a new technique for identifying hazards and assessing risks of injury specific to professional employment in any type of organization.

This evaluation method comprises three sections, namely:

- a) Analysis of the risk of work accidents and professional diseases at workplace / activity performed within the analysed area along according to operational characteristics applicable at the time (date) of performing the analysis;
- b) Analysis of the risk of accidents and professional diseases, resulting from the proposed prevention and protection measures applicable;
- c) Implementation of measures of prevention and protection and carrying-out an analysis through reassessment of the level of risk of injury and occupational disease;

**Keywords:** *occupational health and safety, risk level, risk identification, control measures*

**REZUMAT.** În lucrarea de față este prezentată o nouă tehnică de identificare a pericolelor și evaluare a riscurilor de accidentare profesională specifică locurilor de muncă din oricare tip de organizație.

Această metoda de evaluare cuprinde trei secțiuni și anume:

- analiza nivelului de risc de accidentare și îmbolnăvire profesională, existent la locul de muncă / activitatea prestată în zona analizată, cu caracteristicile de execuție existente la momentul (data) analizei;
- analiza nivelului de risc de accidentare și îmbolnăvire profesională, rezultat în urma propunerii de măsuri de prevenire și protecție, aplicabile;
- aplicarea măsurilor de prevenire și protecție și analiza prin reevaluare a nivelului de risc de accidentare și îmbolnăvire profesională;

**Cuvinte cheie:** *sănătate și securitate la locul de muncă, nivel de risc, identificarea riscului, măsuri de control*

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## **Introduction**

Risk identification and assessment of the risk level are both underlying the base of the entire safety and health at work system within an organization. The evaluation team:

- *implements the three sections* of the valuation technique;
- determines the serious risk level;
- establishes safety at work related deficiencies / misconducts;
- proposes preventive and protective measures to be implemented to reduce the level of serious risk to a tolerable level within the organization;

For each job position / activity, the evaluation team analyses and monitors carefully every work process / environment and identifies in each stage the hazards and their related risk factors.

## **Identifying hazards and assessing risks relating regarding Health and Safety at Work (HSW)**

In order to establish the serious risk, the assessment team will:

- explore work process phases performed by the worker within the related work environment;
- identify hazards / related risk factors source;
- determine the possible / potential consequences generated by risk factors.

## **Number of people exposed to identified hazard**

As part of the work examined we shall define precisely the persons involved in work activities (i.e. employees with individual employment contract at the workplace undergoing analysis, occasional staff - i.e. contractors, guests, professional staff, others people potentially exposed) resulting in the total number of people exposed [NT1].

## **Impact elements on serious risk**

After completing the above steps, the assessment team will determine the serious risk related impact elements by assessing the frequency of risk [F1], the probability of a serious risk [P1] and the severity of consequence on people [G1].

We will determine:

- Coefficient of impact in the total number of people exposed, [CN1]:

$$CN1 = NT1 / (F1 + P1) \quad (1)$$

- Serious risk level analysed [NRE]:

$$[NRE] = (F1 \times P1 \times G1) + CN = (P1 \times F1 \times G1) + NT1 / (F1 + P1) \quad (2)$$

By applying the abovementioned algorithm one evaluates the risk level associated with each hazard. For each criterion one applies a scoring system between [ranging 1-5] as shown in Table 1 below with the following specifications:

[1] – is the minimum level of criterion manifestation;

[5] – is the maximum level of criterion manifestation.

Depending on the result / score obtained for the level of risk to be assessed, we shall estimate what kind of risk level that would be generated i.e. a severe or a tolerable risk, by performing the classification of the parameter obtained by the scoring range.

**Table 1.** Risk level assessment and classification

| SCORE | FREQUENCY<br>[F1]                    | PROBABILITY<br>P1]                  | NO. OF PEOPLE<br>EXPOSED<br>(N) | GRAVITY<br>[G1]  | SCORING<br>RANGE      |                         |
|-------|--------------------------------------|-------------------------------------|---------------------------------|--|-----------------------|-------------------------|
|       |                                      |                                     |                                 |  | Serious<br>risk level | Tolerable<br>risk level |
| 5     | Constantly<br>(permanently)<br>[5]   | Continuously<br>(daily)<br>[5]      | RANGING FROM ONE TO 100 PEOPLE  | Disaster<br>(fatal accident or disablement)<br>[5]   | >3.5 ----- 135        | 1 ----- 3.5             |
| 4     | Frequently<br>(once a day)<br>[4]    | Very likely<br>(once a week)<br>[4] |                                 | High<br>(unable to work with more then 3<br>days of medical care)<br>[4]   |                       |                         |
| 3     | Occasionally<br>(once a week)<br>[3] | Probably<br>(once a month)<br>[3]   |                                 | Average<br>(unable to work with less or up to<br>3 days of medical care)<br>[3]  |                       |                         |
| 2     | Rarely<br>(once a month)<br>[2]      | Possible<br>(once a year)<br>[2]    |                                 | Small<br>(one day of medical care with first<br>aid being granted)<br>[2]  |                       |                         |
| 1     | Hardly ever<br>(once a year)<br>[1]  | Unlikely<br>(every 10 years)<br>[1] |                                 | Insignificant<br>Staff member(s) suffered light or<br>mild injuries with first aid being<br>granted but no work<br>interruptions)<br>[1] |                       |                         |

The evaluation team analysed the shortcomings / misconducts from the prevention and protection measures already implemented, and such shortcomings / misconducts generating serious risks and propose measures of prevention and protection that once implemented will reduce the risk level from serious to tolerable.

### **Impact elements of tolerable risk:**

Shortcomings / misconducts from prevention and protection measures.  
Prevention and protection measures implemented to reduce the level of risk.

Total number of people exposed, [NT2]:

$$[NT2] \leq [NT1]$$

(3) Frequency [F2]

Probability [P2]

Gravity [G2]

Impact coefficient of the total number of people exposed [CN]:

$$CN = NT2 / (F2 + P2) \quad (4)$$

Level of tolerable risk, [NRT]:

$$[NRT] = (F2 \times P2 \times G2) + CN = (F2 \times P2 \times G2) + NT2 / (F2 + P2) \quad (5)$$

### **Case Study**

In order to identify the hazards and carry out the serious risk assessment regarding HSW at the work process / environment level applied by the organization, a case study was conducted on the implementation of technical methods for professional risk assessment in small and medium enterprises (SMEs).

Work process evaluated: cold compressing of metals.

Cold compressing was subject to a stage review by the assessment team and the outcomes were inputted in Table 2 below.

**Table 2.** Analysis and evaluation of cold compressing

| No. | Stages of work process/ work environment  | Hazard / Source of risk factors identified                      | Possible / potential consequences generated by risk factors                           |
|-----|---|---|---|
| 1.  | Supplying workplace with semi-finished products through a contained handled with forklift | Handling the semi-finished products container with the forklift | Catching, striking, and/or crushing the operator by the container handled by forklift |

| No. | Stages of work process/ work environment  | Hazard / Source of risk factors identified  | Possible / potential consequences generated by risk factors  |
|-----|---|---|--|
| 2.  | Reading operating instructions in the operator manual by the cold press operator (technological documentation work)               | Failing to read operating instructions in the operator's manual by the cold press operator. | Injuries due to an inadequate performance of controls and manoeuvres by an operator not familiarized with the technological process.     |
| 3.  | Lubricating the operational parts of the matrix (using a brush)   | Lubricating grease used for grease.   | Splashing the press operator face and/or eyes with lubricating grease.<br>Skin injuries when getting in contact with lubricating grease. |
| 4.  | Collecting the semi-finished metal product from the container and placing it into the matrix.                                     | Semi-finished metal part made of sharp edged plate.   | Injuries to the upper limbs (arms) of the operator   |
| 5.  | Cold pressing in matrix   | Matrix mobile parts of the matrix   | Catching the upper limbs (arms) of the operator into the operational parts of the matrix.  |
| 6.  | Manual extraction of waste resulted from the stamping carried out by the operator   | Waste resulted from stamping the semi-finished products                                     | Injuries to the upper limbs (arms) of the operator   |
| 7.  | Extraction of metal part from the matrix  | Stamped component   | Injuries of the upper limbs (arms) of the operator   |
| 8.  | Storing the stamped components into the container   | Manual and periodical handling of stamped components.                                       | Back pain conditions   |
| 9.  | Electric circuit malfunction of the press and an unauthorised intervention of the operator at the electrical circuit of the press | Electric installation of the powered press  | Operator electrocution   |

| No. | Stages of work process/ work environment  | Hazard / Source of risk factors identified                       | Possible / potential consequences generated by risk factors                              |
|-----|---|--|--|
| 10. | Mechanical malfunction of the press and an unauthorised intervention of the operator at the mechanical parts of the machine | Press mechanical / hydraulic component                           | Catching the operator upper limbs (arms) in the moving parts of the machines             |
| 11. | High working pace of the press  | Noise generated during working when cold pressing materials      | Ear disorders  |
| 12. | High working pace of the press  | Vibrations generated during working when cold pressing materials | Body disorders   |
| 13. | Oil leakage from the hydraulic tank or lubricating can  | Slippery surfaces due to oil on the floor                        | Knocks, sprains, fractures caused by operator's falling on the floor                     |
| 14. | Visibility at workplace   | Insufficient lighting around the machine                         | Eye disorders  |
| 15. | Marking the traffic route with delineation (signalling) of the working area/place for the press operator                    | Domestic means of transportation                                 | Catching, striking, and/or crushing the operator by the domestic means of transportation |

In the framework of work process analysed i.e. "*cold pressing of metals*" the assessment team established the stages of work procedures / environment. Fifteen phases of the work process / environment were identified and for each phase the hazard / risk factors related source were identified too For each hazard / risk identified possible / potential consequences generated by risk factors were established.

In the framework of work process / environment under review, the evaluation team identified the people involved in the all phases of work and there were assessed the serious risk impact elements specified in Table 3 below.

**Table 3**

| No. | Employees with Employment Contract at the analysed workplace | Occasional staff | Specific staff | Other people | Total no of people exposed [N <sub>T1</sub> ] | Frequency [F1] | Probability [P1] | Coefficient of impact of the total no of people exposed [C <sub>N</sub> ] | Gravity [G1] | Level of serious risk assessed [NRE] |
|-----|--|------------------|----------------|--------------|---|----------------|------------------|---|--------------|--------------------------------------|
| 1.  | 1  | 0                | 1              | 0            | 2   | 3              | 3                | 0.33  | 4            | 36.33                                |
| 2.  | 1  | 0                | 2              | 0            | 3   | 4              | 2                | 0.50  | 4            | 32.50                                |
| 3.  | 1  | 0                | 0              | 0            | 1   | 5              | 3                | 0.13  | 3            | 45.13                                |
| 4.  | 1  | 0                | 0              | 0            | 1   | 5              | 5                | 0.10  | 3            | 75.10                                |
| 5.  | 1  | 0                | 0              | 0            | 1   | 5              | 3                | 0.13  | 5            | 75.13                                |
| 6.  | 1  | 0                | 0              | 0            | 1   | 5              | 3                | 0.13  | 3            | 45.13                                |
| 7.  | 1  | 0                | 0              | 0            | 1   | 5              | 3                | 0.13  | 3            | 45.13                                |
| 8.  | 1  | 0                | 0              | 0            | 1   | 4              | 2                | 0.17  | 2            | 16.17                                |
| 9.  | 1  | 0                | 1              | 0            | 2   | 3              | 3                | 0.33  | 5            | 45.33                                |
| 10. | 1  | 0                | 1              | 0            | 2   | 2              | 2                | 0.50  | 4            | 16.50                                |
| 11. | 1  | 0                | 0              | 0            | 1   | 5              | 2                | 0.14  | 5            | 50.14                                |
| 12. | 1  | 0                | 0              | 0            | 1   | 5              | 2                | 0.14  | 3            | 30.14                                |
| 13. | 1  | 0                | 0              | 0            | 1   | 3              | 3                | 0.17  | 4            | 36.17                                |
| 14. | 1  | 0                | 3              | 0            | 4   | 2              | 3                | 0.80  | 2            | 12.80                                |
| 15. | 1  | 0                | 3              | 0            | 4   | 4              | 3                | 0.57  | 5            | 60.57                                |

***Example of calculation of serious risk level assessed at Phase I:***

Supplying the workplace with semi-finished products in container, handled with forklift involving two operators i.e. press operator and forklift operator.

Hazard frequency [F1] = 3 (once a week);

Probability [P1] = 3 (once a month);

Coefficient of impact of the total no of people exposed [CN]:

$$[C_{Ni}] = NT / (F1 + P1) = [CN] = 2 / (3+3) = 0.33$$

Gravity [G1] = 4 (work incapacity with more than 3 days of medical care)

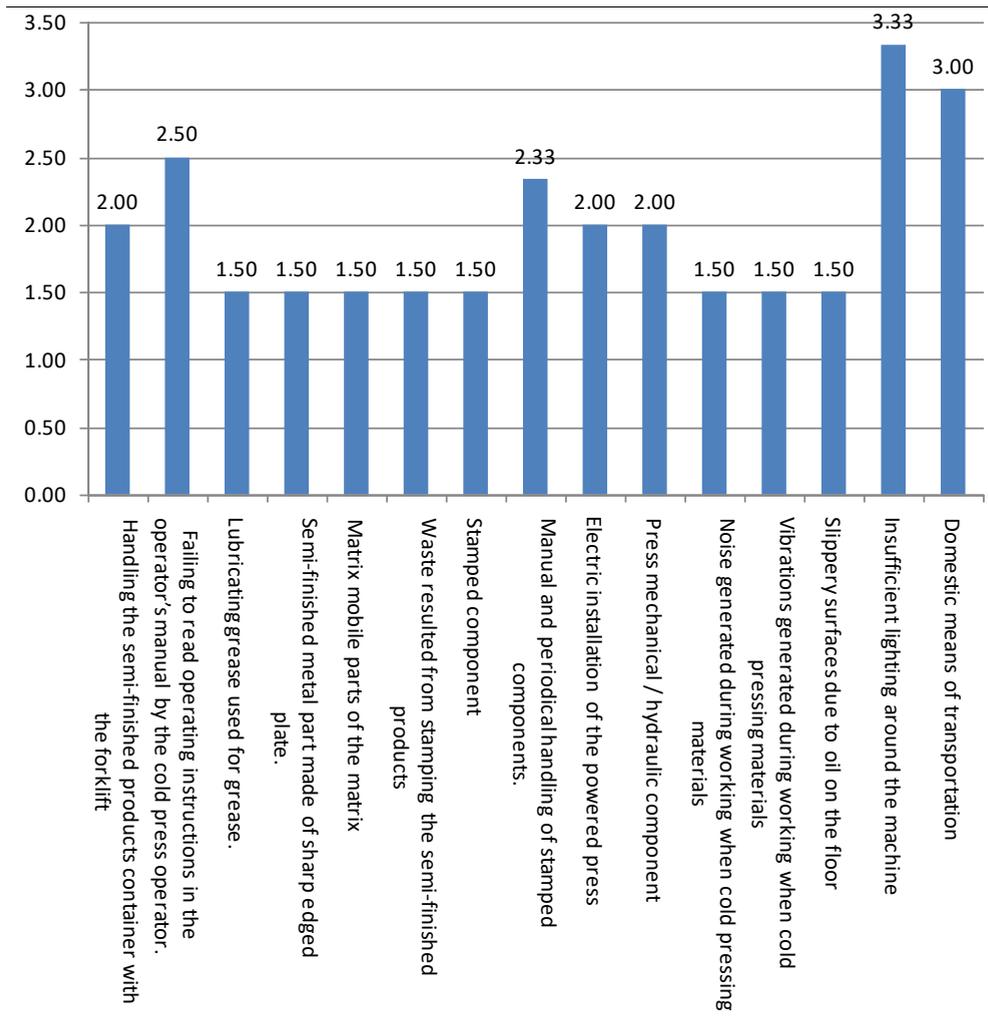
Level of serious risk assessed [NRE]:

$$[NRE] = (F1 \times P1 \times G1) + C_N = (F1 \times P1 \times G1) + N_{T1} / (F1 + P1) \tag{7}$$

resulting:

$$[NRE] = (3 \times 3 \times 4) + 0.33 / 2 / (3 + 3) = 36.33 \tag{8}$$

In this way all parameters of serious risk level were calculated for all phases of the work process in the case of press operator and the corresponding values were inputted in Table 3. Based on the above data, Chart 1 shows the graphical representation of the serious risk level assessed [NRE]. The graph shows that the moving parts of the matrix followed at close range by the sharp edged blank sheet metal both present a serious risk levels assessed with the highest values (75.13 and 75.10, respectively), while domestic transportation means rank 3<sup>rd</sup> (60.57).



**Chart 1.** Graphical representation of the level of serious risk assessed [NRE]

### Measuring the level of tolerable risk within the organization

For each stage of the process work analysed – cold pressing of metals – there were established both the deficiencies / misconducts from the measures of prevention and protection, and the preventive and protective measures implemented to reduce the level of risk to a tolerable level within the organization (see Table 4 below) .

**Table 4.** Prevention and protection measures

| No. | Stages of work process/ work environment   | Shortcomings / misconducts from prevention and protection measures   | Prevention measures implemented to reduce the serious risk level  |
|-----|--|--|---|
| 1.  | Supplying workplace with semi-finished products through a contained handled with forklift                      | Handling the forklift by untrained and unauthorised staff  | Forklift operators will be trained and authorised by ISCIR  |
| 2.  | Reading operating instructions in the operator manual by the cold press operator (technological documentation) | Lack of knowledge/training from the operator regarding the cold pressing technological process             | Before starting his/her work the cold press operator will read and acknowledge the provisions in the work technical documentation |
| 3.  | Lubricating the operational parts of the matrix (using a brush)  | Failure to use personal protective equipment provided (overalls, gloves, goggles)                          | Press operator will use compulsory the protective equipment provided.   |
| 4.  | Collecting the semi-finished metal product from the container and placing it into the matrix.                  | Failure to use personal protective equipment provided (overalls, gloves)                                   | Press operator will use compulsory the protective equipment provided.   |
| 5.  | Cold pressing in matrix  | Failures in mobile protection shields of the press. Blocking intentionally one of the dual controls of the | Press shall be operated only after securing all mobile protection shields. Operating the machine shall be based on dual           |

| No. | Stages of work process/ work environment  | Shortcomings / misconducts from prevention and protection measures   | Prevention measures implemented to reduce the serious risk level   |
|-----|---|--|--|
|     |   | machine. Intervention on the part after a machine operation was launched.  | control only, using both hands of the operator. No intervention on the part dedicated area shall be carried out after launching the machine operation.       |
| 6.  | Manual extraction of waste resulted from the stamping carried out by the operator   | Waste resulted from stamping the semi-finished products was extracted by hand, without using gloves, tweezers or lifting hooks | When extracting the waste the operator shall wear gloves compulsory and / or tweezers or lifting hooks shall be used.  |
| 7.  | Extraction of metal part from the matrix  | Stamped component shall be extracted from the matrix by hand without using gloves, tweezers or lifting hooks                   | When extracting the matrix the operator shall wear gloves compulsory and / or tweezers or lifting hooks shall be used.                                       |
| 8.  | Storing the stamped components into the container   | Storage container shall be placed at a safe distance from the operator   | Placing the components storage container will be in the vicinity of operator for a sound and smooth handling and to prevent faulty movements of the operator |
| 9.  | Electric circuit malfunction of the press and an unauthorised intervention of the operator at the electrical circuit of the press | Unauthorized intervention from the press operator at the electrical circuit of the machine                                     | Interventions on the electrical wiring of the machine shall be carried out only by certified specialist after getting in contact with the operator           |
| 10. | Mechanical malfunction of the press and an unauthorised intervention of the operator at the mechanical components of the machine  | Unauthorized intervention from the press operator at the mechanical/hydraulic components of the machine                        | Interventions on the mechanical/hydraulic components of the machine shall be carried out only by certified mechanic or installer/                            |

| No. | Stages of work process/ work environment   | Shortcomings / misconducts from prevention and protection measures  | Prevention measures implemented to reduce the serious risk level  |
|-----|--|---|---|
| 11. | High working pace of the press   | Not measuring the noise level at the level of press operator the working environment  | Measuring and assessing the noise level and providing the specific individual protection equipment. Medical checks – audiometry.                                      |
| 12. | High working pace of the press   | Not measuring the vibration level at the level of press operator the working environment  | Measuring vibration level. Regular medical checks.  |
| 13. | Oil leakage from the hydraulic tank or lubricating can   | Failure of tanks containing oil or lubricant oil spillage on the floor in the work area   | Repairs works to and use of recipients with adequate oil preventing any leakage of oil and lubricating grease   |
| 14. | Visibility at workplace  | Inappropriate placement of luminaire around the machine   | Providing an adequate lighting of the work areas  |
| 15. | Marking the traffic route with delineation (signalling) of the working area/place for the press operator | Not safety signalling through strict marking and delineating the traffic areas for the domestic transportation. Non-compliance with the traffic rules applied to domestic transportation. | Marking the domestic traffic route and the dedicated areas of the press operator work place.<br>Compliance with the rules and regulations regarding domestic traffic. |

In this way each phase of work was reviewed, identifying both the shortcoming / misconduct from the measure of prevention and protection, and the prevention and protection measure implemented to reduce the level of risk. After the first analysis the risk level was recalculated taking into account the impact elements resulting the level of tolerable risk presented in Table 5 below.

**Table 5.** Level of tolerable risk

| No. | No. of people exposed  |                  |                |              |   | Impact elements of tolerable risk |                  |   |                           | Tolerated risk level I [NRT] |
|-----|--|------------------|----------------|--------------|---|-----------------------------------|------------------|---|---------------------------|------------------------------|
|     | Employees with Employment Contract at the analysed workplace | Occasional staff | Specific staff | Other people | Total No of people exposed [N <sub>T2</sub> ] | Frequency [F2]                    | Probability [P2] | Coefficient of impact of the total no of people exposed [C <sub>N</sub> ] | Gravity [G <sub>2</sub> ] |                              |
| 1.  | 1  | 0                | 1              | 0            | 2   | 1                                 | 1                | 1.00  | 1                         | 2.00                         |
| 2.  | 1  | 0                | 2              | 0            | 3   | 1                                 | 1                | 1.50  | 1                         | 2.50                         |
| 3.  | 1  | 0                | 0              | 0            | 1   | 1                                 | 1                | 0.50  | 1                         | 1.50                         |
| 4.  | 1  | 0                | 0              | 0            | 1   | 1                                 | 1                | 0.50  | 1                         | 1.50                         |
| 5.  | 1  | 0                | 0              | 0            | 1   | 1                                 | 1                | 0.50  | 1                         | 1.50                         |
| 6.  | 1  | 0                | 0              | 0            | 1   | 1                                 | 1                | 0.50  | 1                         | 1.50                         |
| 7.  | 1  | 0                | 0              | 0            | 1   | 1                                 | 1                | 0.50  | 1                         | 1.50                         |
| 8.  | 1  | 0                | 0              | 0            | 1   | 2                                 | 1                | 0.33  | 1                         | 2.33                         |
| 9.  | 1  | 0                | 1              | 0            | 2   | 1                                 | 1                | 1.00  | 1                         | 2.00                         |
| 10. | 1  | 0                | 1              | 0            | 2   | 1                                 | 1                | 1.00  | 1                         | 2.00                         |
| 11. | 1  | 0                | 0              | 0            | 1   | 1                                 | 1                | 0.50  | 1                         | 1.50                         |
| 12. | 1  | 0                | 0              | 0            | 1   | 1                                 | 1                | 0.50  | 1                         | 1.50                         |
| 13. | 1  | 0                | 0              | 0            | 1   | 1                                 | 1                | 0.50  | 1                         | 1.50                         |
| 14. | 1  | 0                | 3              | 0            | 4   | 1                                 | 2                | 1.33  | 1                         | 3.33                         |
| 15. | 1  | 0                | 3              | 0            | 4   | 1                                 | 1                | 2.00  | 1                         | 3.00                         |

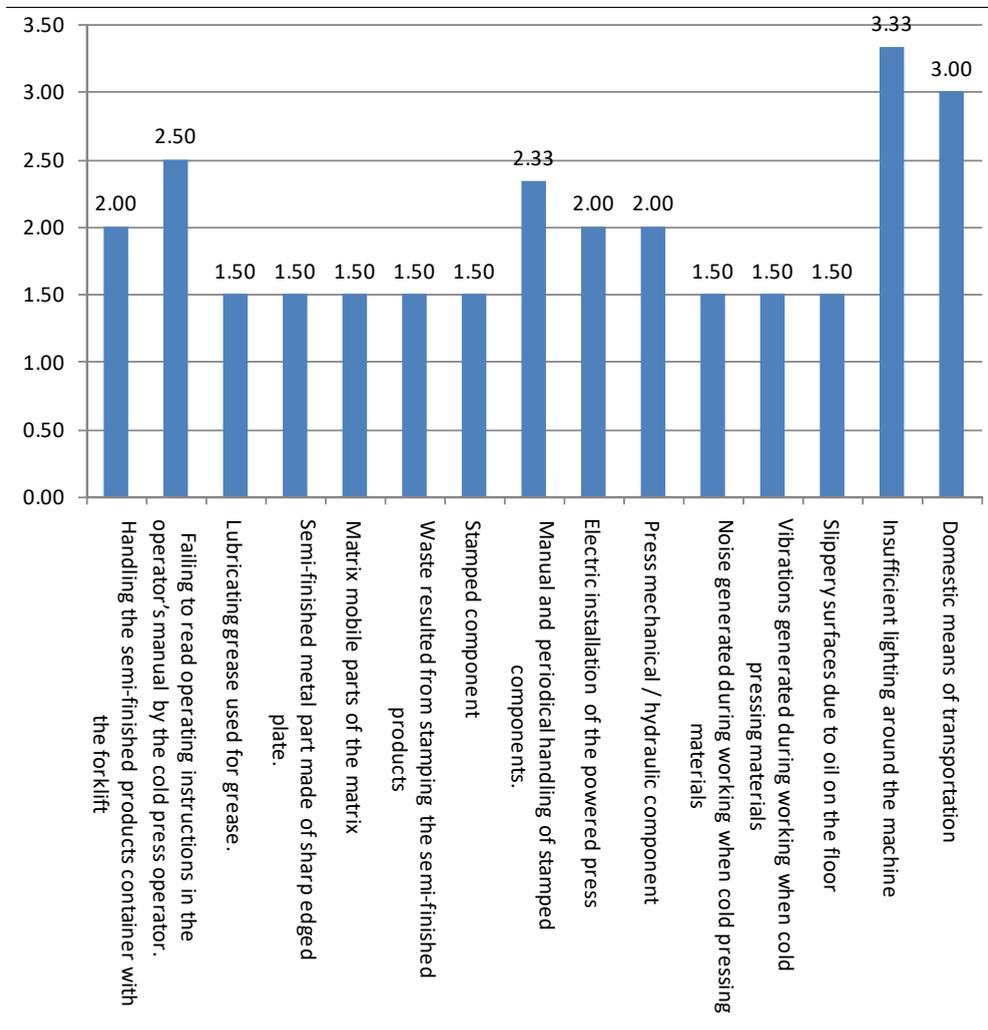
**Calculation of level of tolerable risk:**

$$[NRT] = (F2 \times P2 \times G2) + N_{T2} / (F2 + P2) \tag{9}$$

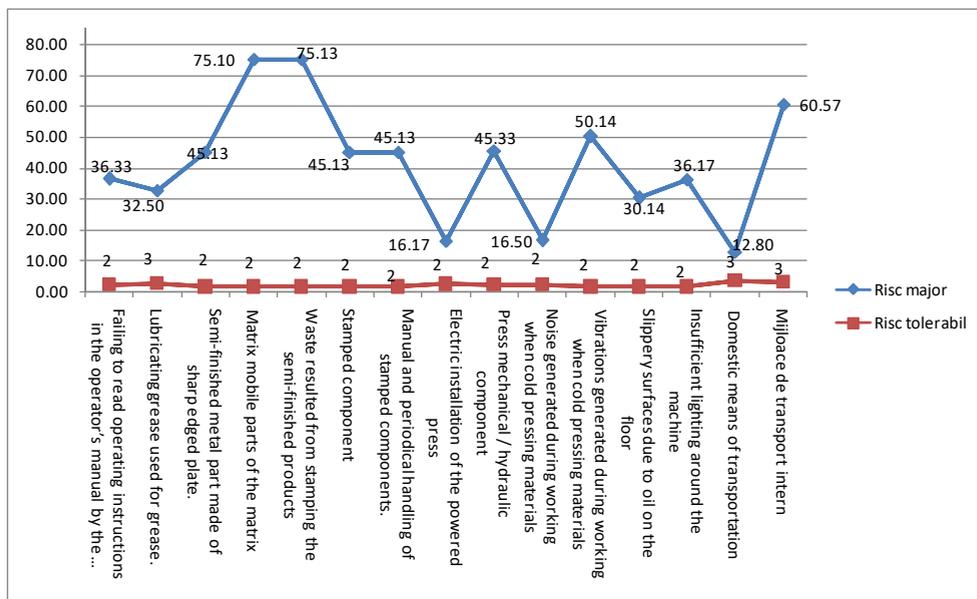
$$[[NRT] = (1 \times 1 \times 1) + 2 / (1 + 1) = 1 + 1 = 2 \tag{10}$$

According to the graphical representation of the level of tolerable risk [NRT] presented in Chart 2 above, one can notice that the insufficient lighting in the area of the machine (by inappropriate placing of the luminaire) generates the highest risk level (3.33), followed by the domestic transport (3.00) and failure to read instructions in the operator’s manual (2.50).

Chart 3 presents a comparative graphical representation of serious risk levels assessed and the tolerable risk factors for the 15 risk factors identified in our case study.



**Chart 2.** Graphical representation of the level of tolerable risk, [NRT]



*Chart 3. Graphical representation of serious and tolerable risk levels*

### Conclusions

In the case of the workplace analysed i.e. press operator there were identified 15 hazards encompassing related risks and whose risk levels exceed the tolerable level of 3.5. This requires the implementation of prevention and protection measures to minimize the risks to levels tolerable by the organization. The measures implemented lead to ensure the health and safety at work by downsizing the serious level of risk to a tolerable level for the workplace analysed. Risks identified by the technical evaluation method presented in this paper must undergo a close and periodic monitoring and updating to ensure that the measures taken are still enforced.

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## INFORMED OR PRESUMED CONSENT IN ORGAN DONATION: FRANCE AND ROMANIA LEGAL FRAMEWORK

SÉLIM BENYELLES<sup>1</sup>, MARIA ALUAȘ<sup>2</sup>

**REZUMAT.** Realizarea consimțământului cu privire la donarea sau primirea de organe este unul dintre cele mai dezbătute teme în materie. Când organele urmează să fie prelevate de la donatori decedați întrebările apar cu privire la felul consimțământului: informat sau prezumat? Când donatorii sunt vii consimțământul trebuie să fie explicit, în mod obligator, însă aici apar dileme etice relative la realizarea efectivă a acestuia: era donatorul pe deplin informat, era donatorul liber să aleagă, mai ales atunci când primitorul este un membru de familie sau cineva apropiat. Prin urmare a deschide dezbateră cu privire la consimțământ atunci când avem de a face cu donatori de organe, vii sau decedați este un demers complex, care ridică multe întrebări și dă puține soluții. Acest articol prezintă o analiză comparată a reglementărilor legale din Franța și din România privind tipurile de consimțământ la donarea de organe. Autorii arată care sunt asemănările și deosebirile dintre cele două reglementări, punând accent pe datele care vin din zona transplului de rinichi, considerat a fi organul pilot în materie de transplant și un miracol al secolului al XX-lea.

**Cuvinte cheie:** *Consimțământ Informat, Consimțământ prezumat, Donare de Organe, Transplant, Aspecte Legale.*

**ABSTRACT.** Giving the consent to donation or receiving organs is one of the most debated issues in the field. When organs have to be taken from deceased donors, the type of consent is the most debated: informed or presumed? When donors are alive, the consent must to be explicit, and mandatory, but there are some ethical dilemmas about its actual realization: if the donor was fully informed, if he/she was free to choose, especially when the recipient is a family member or someone close to the donor. Hence opening the debate on consent issues related to donors, living or deceased is a complex approach that raises many questions and gives few solutions. This paper presents a comparative analysis of the legal regulations in France and Romania regarding the types of consent to organ

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donation. The authors point out what are the similarities and differences between the two regulations, focusing on the data coming from the kidney transplants area, considered to be the pilot organ in transplantation and a miracle of the twentieth century.

**Key words:** *Informed Consent, Presumed Consent, Organ Donation, Transplantation, Legal Issues.*

## **1. General considerations on the Informed Consent**

Informed Consent is an ethical concept that has become integral to contemporary medical practice. Informed Consent process implies two movements: one, to provide information in order to obtain a positive feedback; second, to have the consent and the permission from the patient to perform treatments, surgery or other medical procedures. The Council for International Organizations of Medical Sciences (CIOMS) in collaboration with the World Health Organization (WHO) define in 2002, the Informed Consent as “a decision to participate in research, taken by a competent individual who has received the necessary information; who has adequately understood the information; and who, after considering the information, has arrived at a decision without having been subjected to coercion, undue influence or inducement, or intimidation” (Guideline 4: Individual informed consent). This is the general rule, for adults and legally competent persons, who can understand the information, who can ask more information, who can accept or refuse treatments. But the pediatric practice is an exception from the general rule. From a legal point of view, minor patients are not competent to accept or to refuse treatments and physicians need to provide all medical information to the legal representatives, who are, in the most of the cases, the parents of the patients.

Providing information and obtaining informed consent in pediatric practice is a complex scenario for all those involved: clinicians, parents, children, legal representatives, ethical counselors, psychologists. Parents have legal and moral authority to make decisions on behalf of their children, although that authority is not absolute and their decisions must be in the best interest of the child (1).

Organ donation and transplantation is considered one of the greatest therapeutic advances of the last century. The first kidney transplant was performed in 1952 in Paris and in 1954 in the United States of America. In order to realize the transplantation, the kidney can be taken from deceased donors and also from the living donors (33). The kidney is the most transplanted organ in the

world. Whether in France or Romania, kidney transplant programs increased significantly. But despite all efforts, as everywhere in the world, there is a serious lack of organs for transplants. Many patients with kidney insufficiency are waiting for an organ to be available, according to statistics and data published in France (by the Agency of Biomedicine) and in Romania (according to Agenția Națională de Transplant) (3, 4).

Ethical issues of kidney transplantation are part of the central topics debated in Europe because many people are suffering from kidney failure and the waiting list grows every year. Those who are in charge with state programs are aware that kidney transplantation is the most economical solution, more affordable than repeated dialysis which does not ensure a good quality of life compared to the transplantation (3).

## 2. Material and methods

As material we have taken into consideration the legal regulations, in force, in Romania and in France, in 2017. We therefore took information from the official website of the two National Agencies of Transplants, in order to make comparisons between the two legal frameworks. Our approach is a mixed, qualitative and quantitative research. The used methods are the descriptive study on the data published by the two official institutions and on the two types of legislation under consideration. The study aims to analyze the French and Romanian regulations on the consent of donor, using different comparative tables. Each table will have a specific topic and will include a certain number of statements; if a statement respects the text of the law then it will be answered by „yes”, the reverse will be „no”. Some statements, that need clarifications, will be noted differently.

Example:

*Table 1.*

| States | Legislation Romania | Legislation France |
|--------|---------------------|--------------------|
| XXX    | Yes                 | No                 |

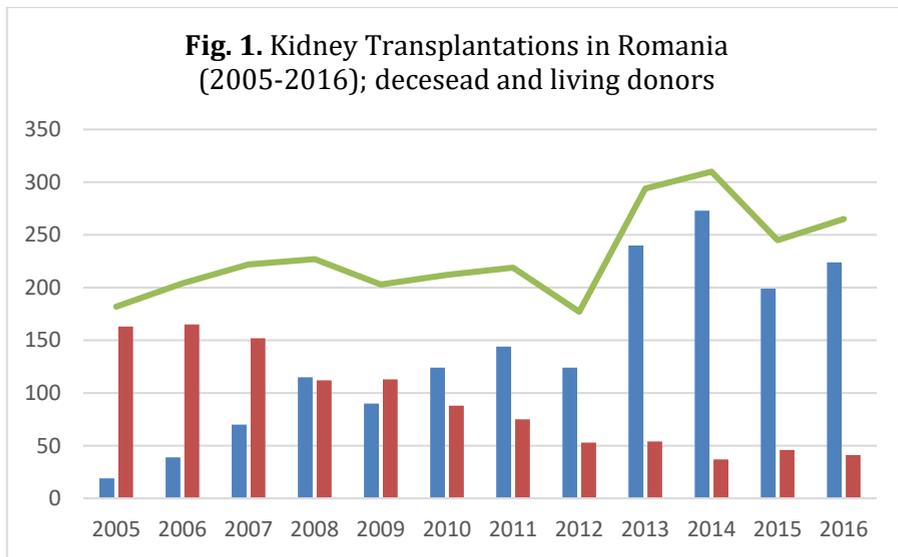
The subjects developed in our study are the following:

- State of the art on kidney transplantations in France and Romania;
- General information on the French and Romanian laws on organ donation;

- Kidney removal from living persons;
- Kidney removal from deceased persons;
- Consent;
- Sanctions in case of trafficking organs.

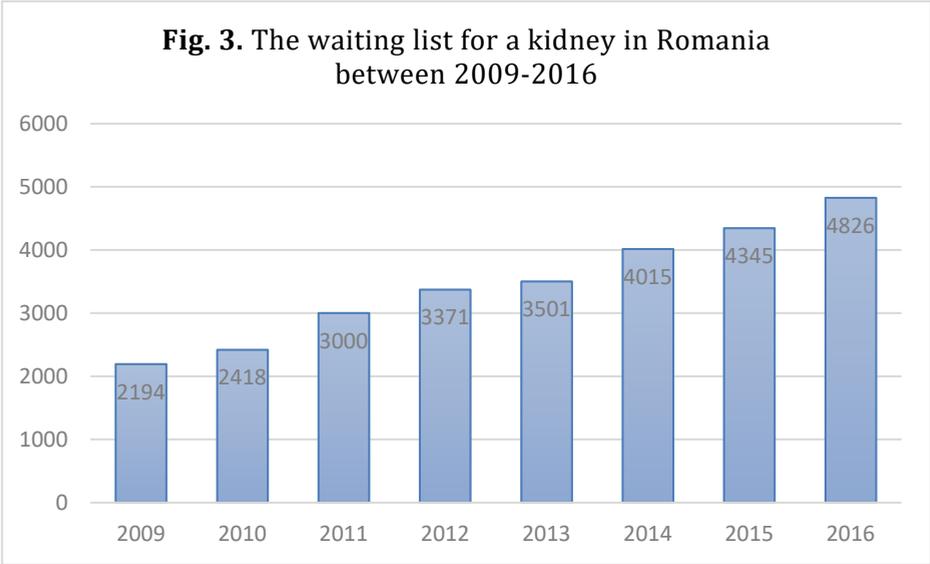
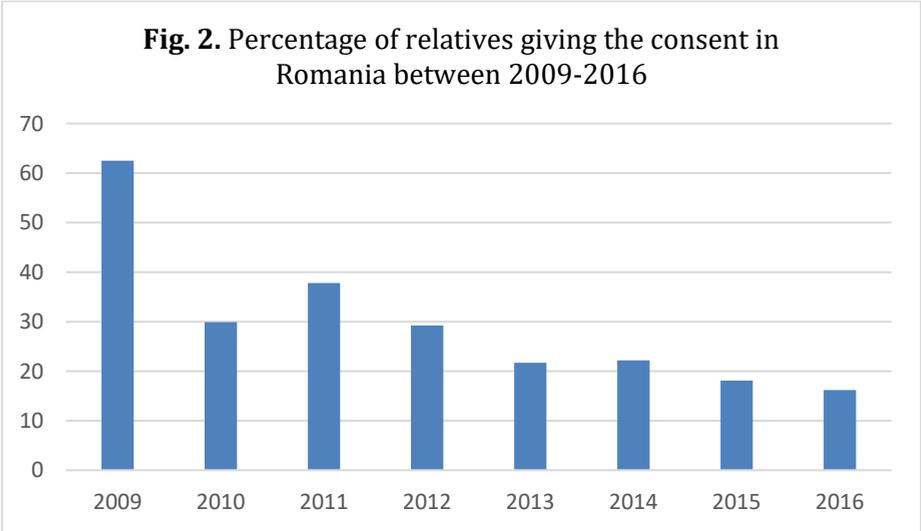
### State of art on kidney transplantations in Romania

The National Agency for Organ Transplantation in Romania ([www.transplant.ro](http://www.transplant.ro)), regularly publishes data on kidney transplants carried out each year. In the following figures we have summarized the grafts carried out between 2005 and 2016.

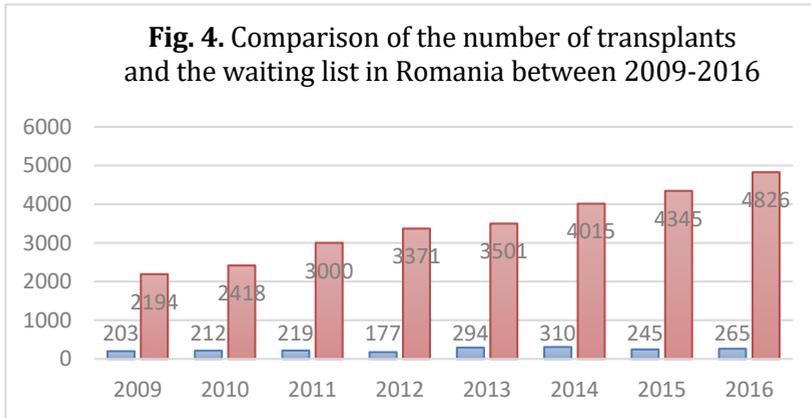


- Kidney transplants from brain death donors
- Kidney transplants from living donors
- Total number of kidney transplants

Between 2005 and 2016, in Romania, there was a tendency of kidney transplantations augmentation. There was a decrease in transplants taken from living donors and an increase from deceased donors, but the trend was reversed in 2008, when the proportion of kidney from deceased donors was higher than before.



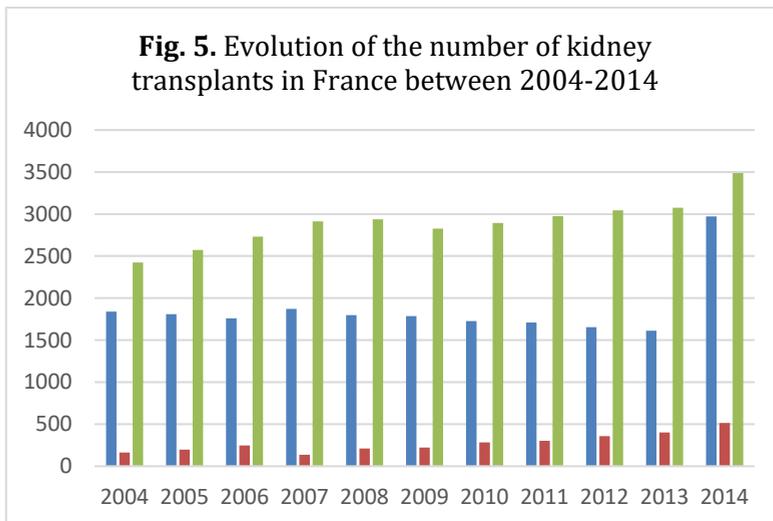
The waiting list has more than doubled between 2009 and 2016, now reaching nearly 5.000 patients waiting for a kidney, accentuating the problem of the lack of organ, despite a downward trend in family refusals.



■ Number of kidney transplants ■ Patients in the waitlist

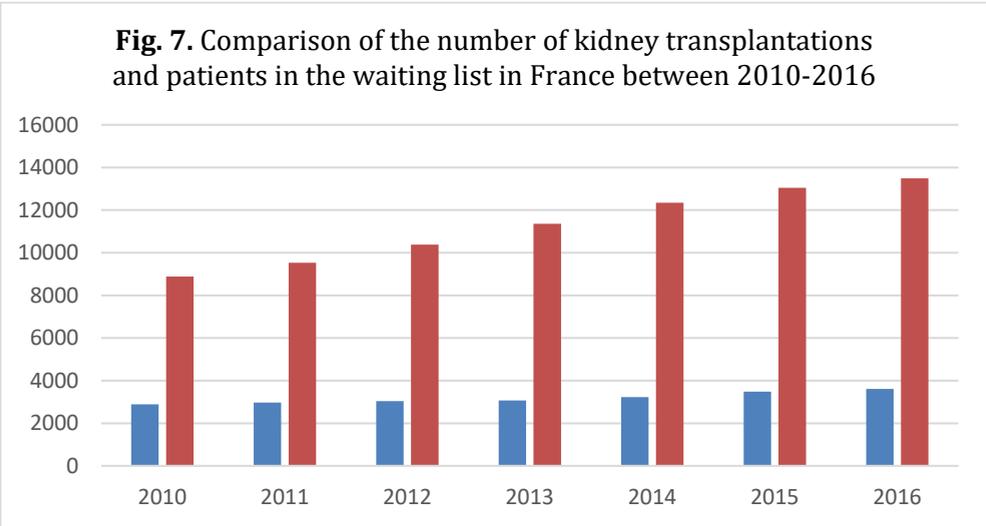
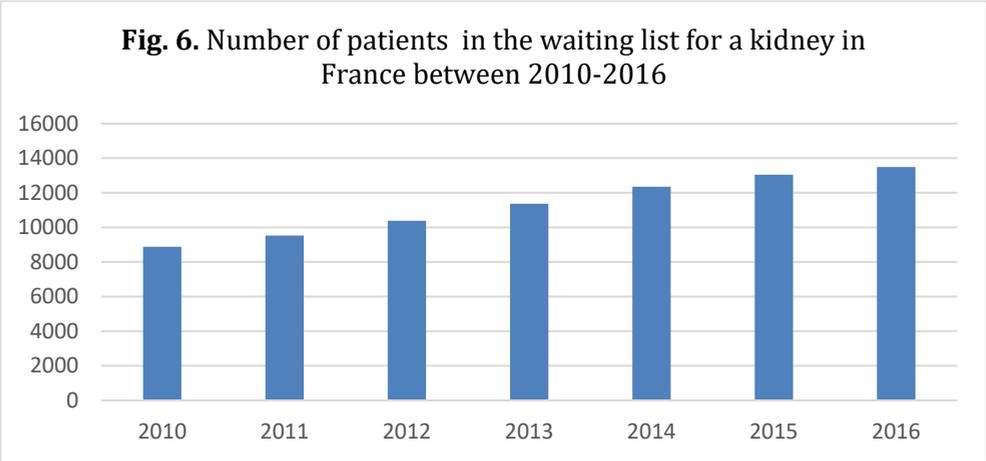
### State of the art on kidney transplantations in France

These data are available on the official website starting from 2010.

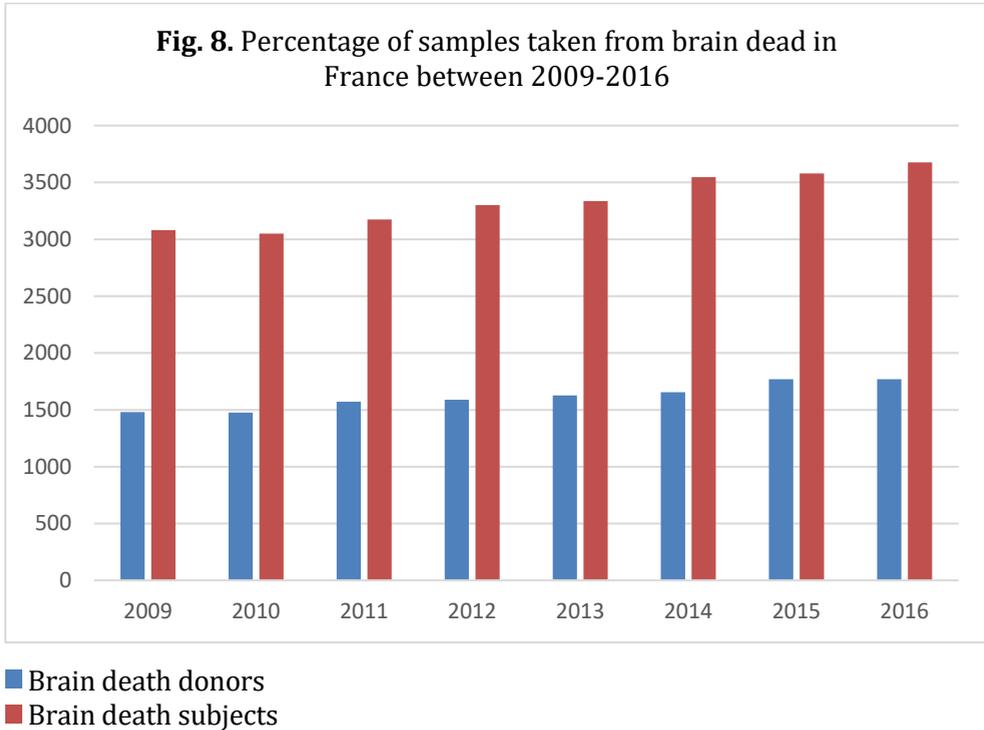


■ Number of brain death kidney donors  
 ■ Number of living kidney donors  
 ■ Total number of kidney transplants

Between 2004 and 2014, in France, kidney transplants have remarkably increased due to a constant evolution each year, from about 2.500 in 2004 to 3.500 in 2014, which is a significant step forward. Unfortunately, the results are rather altered by the increase increase in the number of patients on the waiting list, which almost doubled between 2008 and 2014, the last estimates exceeding 10.000. The rate of refusal of kidney removal remains approximately constant and ranges fairly regularly around 40%.



- Number of kidney transplantations
- Number of patients in a kidney waitlist



From the figures above (1 to 8), the first observation is that between France and Romania, in spite of the figures having a ratio that is ten times higher in France, there are some similarities in the overall situation: transplants have increased, but the waiting list too. The refusal rate remains comparable which does not help in solving the problem of lack of organs (3, 4).

### **The Consent of the donor**

The “presumed consent” means explicitly refusing to “leave” the group of potential donors or “opting out”.

Explicit consent means asking to be a donor to “enter” the group of potential donors or “opting in”.

The families or the relatives of the patient in the brain dead conditions may testify to the agreement of the deceased. Indeed, each modality of consent can be qualified according to the power granted to the donor's family to revoke its decision to donate or refuse.

For example, two other sub-categories of presumed and informed consent can be defined in terms of the decision-making power of families: explicit consent strong: not an organ donor unless explicit expression of willingness to give and families / relatives have no decision-making power; explicit consent **low**: the family has the final decision-making power, they can accept the giving even if the deceased person has not registered as a donor or has not explicitly stated his/her willingness to give. They may also refuse to donate an organ, even if the person has registered as a donor.

**Fort:** The family cannot refuse the gift or even revoke the will of the deceased even if the person has not spoken during his lifetime (France - since January 2017)

**Presumed Consent low:** No withdrawal made if the family refuses even if the deceased has a donor card.

The place of the family in the decision is important for obvious reasons of ethics and morality.

### 3. RESULTS

#### The laws regulating organ transplantation in Romania and France

Romania has as a general framework in this matter - Law no. 95/2006 regarding Health Reform, in force from 2011, articles 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159.

In France, the laws and regulations applicable to organ donations are the Civil Code, Article 16 of Chapter 2 and the Code of Public Health, Article L1211-1 of the Single Chapter.

**TABLE 1: GENERAL INFORMATION ON FRENCH AND ROMANIAN LAWS CONCERNING ORGAN DONATION** - France: Code of Public Health (Code de la Santé publique) Article L.1211-2; Romania: Law no. 95/14 April 2006 Article 144

| Topics                     | French regulations | Romanian regulation |
|----------------------------|--------------------|---------------------|
| Consent                    | Presumed           | Explicit            |
| Gratuity                   | Yes                | Yes                 |
| Anonymity                  | Yes                | Yes                 |
| Therapeutic Purpose        | Yes                | Yes                 |
| Prohibition of Advertising | Yes                | Yes                 |

**TABLE 2: SAMPLES FROM LIVING DONORS** - France: Code of Public Health (Code de la Santé publique) Article L.1231-1; Romania: Law no. 95/14 April 2006 Article 144

| <b>Samples from living donors</b>  | <b>French regulations</b> | <b>Romanian regulation</b>             |
|--|---------------------------|--|
| A donor able to decide for him/herself   | Yes                       | Yes                                    |
| A minor with the consent of the legal representative   | Yes                       | Yes                                    |
| Prohibition to take an organ, tissue, cells from a person who does not have the capacity to decide         | Yes                       | Yes                                    |
| Prohibition to take an organ, tissue, cells under any constraints: family, professional, financial, moral. | Yes                       | Yes                                    |
| Prohibition to make the donation mandatory by a fact or legal act  | Yes                       | Yes                                    |
| Decision validated by an expert committee  | Yes                       | Yes                                    |
| Possibility of cross-donations in the case of incompatibility between donors and receivers                 | Yes                       | Not mentioned in the Romanian law - No |

**TABLE 3: SAMPLES FROM BRAIN DEATH DONORS** - France: Code of Public Health (Code de la Santé publique) Article L.1232-1; Romania: Law no. 95/14 April 2006 Article 147

| <b>Samples from brain death donors</b>                         | <b>French regulations</b> | <b>Romanian regulation</b> |
|--|---------------------------|----------------------------|
| Disclose the identity of the deceased donor is forbidden       | Yes                       | Yes                        |
| The assessment of the death prior to the sampling              | Yes                       | Yes                        |
| Independence of the physician who declares the death statement | Yes                       | Yes                        |

|  |     |      |
|--|-----|------|
| <p>Sampling of organs is done only after getting the written consent of a family member or relative</p> <p>*If the deceased person had already expressed the consent during his lifetime by notarial act in the National Register of Organ Donors (Article 145-5 of the law no. 95/2006)</p> | Yes | No*  |
| <p>Organ removal is excluded if there is a risk of contamination by an infectious disease</p> <p>*In France there is an exception in the law according to which if the benefit is superior to the risk a quick decision is requiring in urgent situations.</p>                               | No  | Yes* |

**TABLE 4: CONSENT** - France: Code of Public Health (Code de la Santé publique) Article L.1211-2; Romania: Law no. 95/14 April 2006 Article 144

| <b>Consent</b>  | <b>French regulations</b> | <b>Romanian regulation</b> |
|---|---------------------------|----------------------------|
| Written, free, informed   | No                        | Yes                        |
| In the absence of a written will of the deceased donor, it is presumed.   | Yes                       | No                         |
| If the donor does not have the opportunity to express it, then it may be given in writing by a family member or legal representative. | Yes                       | Yes                        |
| If the donor is minor or incompetent it is given by a parent or a legal representative  | Yes                       | Yes                        |
| The sampling is possible even if the consent cannot be obtained, after several attempts to contact the family or a relative.          | Yes                       | Yes                        |

**TABLE 5: SANCTIONS** - France: Criminal Code, Section 1 and 2, Article L.511-1;  
Romania: Law no. 95/14 April 2006 Articles 154, 155, 156, 157, 158 and 159.

| <b>Sanctions</b>   | <b>French regulations</b> | <b>Romanian regulation</b>             |
|--|---------------------------|--|
| Organ, tissues, and cells harvesting, without having the consent   | 5-7 years in prison       | 7 years in prison + 100,000 euros fine |
| Removal of organs, tissues, cells, that compromises forensic autopsy   | 1-3 years in prison       | 2 years in prison + 30,000 euros fine  |
| Advertising in favor of a person for the purpose of obtaining one or more organs, tissues or cells for material advantages | 2-7 years in prison       | 7 years in prison + 100,000 euros fine |
| Organ trafficking including the introduction or removal of tissues and cells without authorization                         | 3-10 years in prison      | 5 years prison + 75,000 euros fine     |

#### 4. DISCUSSIONS

Generally speaking, legal regulations in France and Romania are quite similar, especially concerning conditions of donation: free and anonymous, the therapeutic purpose of donation, and the prohibition of advertising

Regarding the consent, a certain difference is highlighted; France adopted and implemented the presumed consent to organ donation. This is a strong point that differentiates it from Romania, which remains on a conventional pattern of explicit consent. However, it remains free, informed and written.

But in practice, and especially with regard to post-mortem organ donation in the many cases where the deceased person did not make known the desire in favor during his/her lifetime, the impossible question arises on what is the opinion of a deceased person on organ donation.

Also, the donor card has no legal value in France and Romania. It is up to relatives to make a decision, which is difficult most of the time and, as a consequence, inevitably, a high number of refusals appear despite the difficulty related to the shortage of organs.

Regarding the living donors levy, common points have been noticed, especially on the fact that the adults must all be capable, with the agreement of the legal representative for the minors and the decision of a committee of experts. The difference lies in the possibility of cross-donations in case of incompatibility between donor and receiver of the same family - it is possible in France but in Romania this possibility was not mentioned.

Regarding the sampling of deceased persons, there are also many similarities, especially concerning the disclosure of the identity of the donor, the report of death in advance, the independence of the physician who made the death statement and the team in charge of sampling.

The main differences lie in the existence in Romania of an exception in the law to the written consent rule. Indeed, this consent does not have to be taken from relatives if the deceased person had already expressed his/her wish to donate organs by notarial act registered in the national register of organ, tissue and cell donations. In France, this is impossible because as presumed donors, French people do not have to express the 'yes' because it already is, legally. In France one may only express the 'no' from a legal point of view. So, in France there is a register of 'no' to donate organs.

Another important difference is that in France it is possible to transplant an organ that has been the subject of an infectious disease if the doctor responsible for the transplant considers that the benefit / risk ratio is in favor of the transplant. This is not the case in Romania from a legal point of view.

French and Romanian laws are very similar but some differences are notable, fact that clearly shows a strong legal link between the two countries.

On the other hand, we can discuss about the allocation and distribution of organs at a national level in both countries. In France, the management of the national waitlist is under the responsibility of the National Agency of Biomedicine. The distribution rules are drafted by a national expert group, in order to reduce the inequalities of the access to organs between patients and to optimize the efficiency of the distribution of organs. There is still quite a large variation between regions and teams, as shown by the shortage of organs. These rules are available on the website of the Biomedicine Agency in France.

If the subject's age is less than 18 years old then the organs should be allocated primarily to pediatric recipients, regardless of adult priorities (no adult local kidney). Only the absence of compatible pediatric blood group recipient allows the organ to go to an adult. If the age of the subject is above 18 years it is considered to be local. The organ does not go to patients of national or inter-regional waitlist.

In Romania, there are no rules of this kind for the assignment of transplants even if it remains in the field of the National Agency of Transplant.

Organs taken from deceased people are an invaluable and rare resource. The distribution and allocation of organs is the essential link between harvesting and transplants. The distribution and attribution rules for organs must respect the principles of equity, medical ethics and they should aim to improve the quality of care.

These rules refer to notions of priority and territorial dimension. These concepts reflect the desire to find the balance between a distribution as equitable as possible and the technical constraints inherent in the harvesting, transport and maintenance of organs quality.

The purpose of these rules is to take into account the urgency of the transplant or the particular difficulty of accessing it for certain patients, while seeking optimal use of the organs. The evaluation of the consequences of these rules on the waiting time of patients and the results of transplants will allow their improvement as technical progress.

The Informed and presumed Consent are the major differences between France and Romania, even if, globally speaking; the two policies are very similar. Regarding the allocation of organs in France, rules have been published and although it is not very effective, particularly because of the shortage of organs, France has a certain advantage over Romania but they still cannot solve all problems and find solutions for all patients.

## CONCLUSIONS

The first conclusion of the paper is that between the legal regulations in Romania and France concerning kidney transplant there are some similarities and significant differences. As a similarity, the two countries have adopted specific laws in this area; they have national institutions that manage policies in transplantation. France and Romania share the principles of anonymity, free of charge, therapeutic purpose and the prohibition of advertising.

A notable difference is the modality of achieving the donor's consent, as an essential condition in the situation of a deceased donor. France is one of the countries that have decided to adopt the easier variant, that is to say, the presumed consent. In exchange, Romania chose the explicit consent procedures.

Other differences concern the ways in which organs are allocated. In Romania the rules are not clearly established and give the green light to arbitrary decisions, whereas in France specific rules have been published, in order to try to respect the principle of equity and to avoid confusions and criticism.

The provided sanctions are generally more severe in France than in Romania. In addition to a prison sentence heavy financial penalties are applied in France, with a minimum of 30.000 euros up to 100.000 euros fine.

All this information and data will have to be verified by subsequent research, carried out in different profile centers located in France and Romania. The existence of a considerable number of these types of institutions is a growing need in view of the situation of patients waiting for a kidney transplant that can save lives.

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## INTEGRITY IN RESEARCH AS A NEW CHALLENGE FOR ACADEMIA

**Interview with NOÉMIE AUBERT BONN,  
PhD candidate, Hasselt University, Belgium**

**Question 1:** *“What is, in your opinion, the content of Research Integrity? Why this topic became, in the last years, a current preoccupation for Academia?”*

The content of Research Integrity... That's a difficult question. Research Integrity can have quite different meanings depending on where you are, which institution you're in, which discipline you represent, and especially which guideline you are looking at... In 2014, I did a study with KU Leuven where I looked at different guidance documents from research institutions across Europe, and I extracted what each guidance was targeting and mentioning. Surprisingly, it even happened that guidance from the same institution differed from one document to the next. For example, research integrity sometimes includes research ethics principles (i.e. respecting human and animal participants), but other times not. It is sometimes understood as taking methodology and soundness into consideration, but not always. Guidance sometimes stress how integrity should be protected to avoid personal damage and sentencing, and other times appeals to a moral imperative for the respect of the institution and science as a whole. In more executable terms, research integrity is sometimes paired with interpersonal relationships and behavioral misconduct, but often this is considered a distinct issue. Just last month for example, in response the #metoo campaign, a twitter debate proposed to count sexual harassment as research misconduct itself, with strong pros and cons to the idea... Describing the 'content or Research Integrity' is, therefore, not a very easy task.

What I might be more qualified to discuss is Research on Research Integrity... so if you ask me what Research on Research Integrity is looking at right now, I would say that we are looking at two things. What we know about issues surrounding failures of integrity (i.e., its causes, its consequences, its prevalence), and how we can change to promote research integrity. I will go a bit more in depth in question 2.

As to why the topic became a preoccupation in Academia? Most say it was a reaction to big scandals of research misconduct, scandals that attracted the interest (and criticism) from the media and the public. Then, I think there

was a snowball effect. Increasing awareness on the topic made us question its prevalence. Research on prevalence showed that misconduct and questionable practices of research are not only real, but also arguably frequent. Further research then highlighted that when integrity is trespassed, it has huge implications on science and society (financial, medical, changes in trust, etc.). This is enough to make Research Integrity a genuine preoccupation for the scientific community. But I would say that's not the whole story. I must admit that I am young and that I have entered 'Academia' less than a decade ago, but I am wondering whether there might also be a growing scrutiny of researchers towards their own work. Many people claim that, in the past decades, society and the public has become increasingly aware and critical of political decisions. Maybe researchers have, in a similar way, become more aware of the weaknesses and limitations of their work and are more and more willing to engage in protecting its core Integrity?

**Question 2:** *“Tell us something about the difficulties to cover the content of this new field of research. What are the most usual challenges of your work in this topic?”*

I don't know if I would say there are any more difficulties in Research Integrity than in other research topics. In fact, every researcher I have been speaking to is interested in the topic, funding agencies are becoming more interested as well, the topic is growing and more possibilities are constantly created... Despite the paradoxical competition and perverse incentives that this might engender in the future, I would say I feel quite lucky to be in that field of research.

Nonetheless, there is one thing that I find a little challenging as someone who focuses on the topic. When research on research integrity became a priority of academia (I would say about a decade ago), findings of prevalence of misconduct and questionable research practices scandalized the research community and immediately boosted interest on the topic. It was, indeed, one of the first times researchers realized that science was not the white endeavor it was claimed to be. But now over a decade after the keystone works shed light on these issues, I still find it difficult to locate executable (and executed) solutions. Maybe we feel that the topic still needs more visibility, or maybe executable solutions are still utopic, but I find that a lot of research on research integrity aims to describe the problem rather than target the causes that we found which may disrupt integrity. On a positive note though, some extremely brilliant advances from open science, from publishing groups, and from other scientific technologies are opening an array of new opportunities for change. So I keep my hopes up for tangible changes!

**Question 3:** *“Have students and researchers a positive perception on debating these topics? Why are they interested to talk about Integrity in Research?”*

From my experience, students and researchers of all disciplines have a huge interest in discussing and debating topics of integrity. I think part of their interest comes from the fact that every researcher can relate to issues that affect research integrity. Whether you talk to a philosopher, a historian, an engineer, or a medical researcher, they all undertook research and they all have their personal opinions about what it implies, what it demands, and how it should be performed. This inevitably makes them build opinions and interest towards Integrity and good research practices.

Furthermore, research is often qualified as a profession that requires an intrinsic interest for your topic and for knowledge. In fact, if what they're after is money, researchers are probably in the wrong specialty. And if what they're after is fame, I think they didn't choose very wisely. So I'd say many researchers are researchers because they genuinely care about their topic, because they want to move things forward and give back to society. In this regard, I have spoken to many researchers who also realize that what they need to do to secure their position is not always what will promote knowledge, advances, and translation. I thus think that this internal conflict makes them interested in research integrity, probably as an intrinsic drive to promote better knowledge.

**Question 4:** *“In your opinion, what could be the most appropriate way to integrate Research Integrity and correlative topics in our culture and our daily customs?”*

At the moment, a lot of research on research integrity focuses on training and awareness or on appropriate sanctions for misconduct. Without undermining the value of such research, I believe that research integrity goes way beyond compliance and awareness. In fact, what interests me, and what I think needs priority right now, is a reevaluation of the entire research culture, especially of how researchers are evaluated and promoted. I think that re-thinking how researchers become successful could help re-orient research towards a culture that values quality rather than quantity, or even a step further, towards a culture that promotes transparency before outcomes. I see training and guidelines like necessary and surely not effective painkillers, but I think that we have gathered enough knowledge to try to 'cure' the problem from within the system itself. Maybe this optimistic ambition will fade away after a few years in the field, but I certainly hope it won't 😊.



**EVENIMENT**

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**Ecumenical and Interreligious Approaches to Bioethics:  
The Summer School from Vienna, 12-18 June 2017**

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Just by the fact that they gravitate towards issues related to the beginning and the end of life, the unprecedented achievements in the field of biotechnological medicine, which we experience today both with amazement and worry, raise countless questions of

moral and ethical nature. The contemporary technologies of procreation, genetic engineering, contraception, organ donation or euthanasia – in order to recall just some of them – aren't, from a moral point of view, simple or neutral medical actions. On the contrary these

often require the entire human involvement and they end up, not a few times, by confusing the human sensibilities at a personal or social level. This is the reason why, over the last decades, bioethics emerged as a new science whose task is to analyze and evaluate the ethical implications of the advancements which were made possible by the application of the technological improvements in the medical field. At a global level, physicians, sociologists, psychologists or philosophers are invited in order to pronounce or to give relevant answers to the painful, bioethical disputed issues and which concerns directly or indirectly the value of the human life.

For their part the three great Christian confessions (Roman-Catholic, Orthodox and Protestant Churches) didn't remain impassive to the bioethical discussions and they had put forward official documents in which they had expressed their faith and their point of view. Moreover, remaining at the same inter-confessional level, the bioethical dilemmas are discussed in national or international symposiums or other scientific researches, specialized courses, summer schools and other diverse cultural, educational or informing activities.

Recently, from 12<sup>th</sup> to 18<sup>th</sup> of June 2017, under the auspice of the University of Vienna and the Catholic Faculty of Theology within the first, took place the Summer School entitled *Ecumenical and interreligious approaches to Bioethics*, being coordinated by Ms. Sigrid Müller, dean and professor of Moral Theology at these prestigious Viennese faculty. The event, financially

supported by *Central European Exchange Program from University Studies (CEEPUS)*, gathered several professors of Moral Theology and Bioethics, as well as students from many countries from Central and Eastern Europe. In this way professors and, respectively, students from countries as Austria, Slovenia, Hungary, Poland, Republic of Serbia and Romania were present at this summer school.

On behalf of the Faculty of Orthodox Theology from Cluj-Napoca, Romania, it is Rev. Prof. Ștefan Iloaie, the holder of the discipline of Moral Orthodox Theology, who participated. At this event with inter-confessional character, Rev. Prof. Ștefan Iloaie delivered the next lectures: *An Orthodox Approach to Bioethics*; *Bioethical questions: Do the Christian confessions argue differently*; *Bioethics in the Public Square. Perspectives from Romania and Slovenia* (the last two lectures representing a round table discussion and a course moderated along with prof. Ștefan Tobler – Sibiu, Romania and prof. Roman Globokar – Ljubljana, Slovenia).

Regarding the courses that the Summer School's alumni attended in Vienna, some of them aimed at familiarizing the students with particularly inter-confessional and interreligious perspectives (e. g. the Islamic approach) on Bioethics. Others have brought into their attention current aspects regarding the reception of bioethical interrogations and issues at the political debate and making-decision level in countries as Romania and Slovenia. Finally, there were also courses that emphasized the manner in which the bioethi-

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cal problems is reflected in contemporary fiction (e. g. the lecture *The Bioethics of Gilead – Religion, Gender and Politics in Margaret Atwood’s Fiction*, given by prof. Gustav Kovacs – Pećs, Hungary).

Beyond making students aware of the specific perspectives of each Christian confession concerning bioethics, the ultimate goal of this Summer School was to identify a trans-confessional consensus on various bioethical questions that raise acute consciousness issues and require immediate theological answers.

Last but not least, in order to combine the useful with pleasure, the students had the opportunity to visit the Viennese University, to attend a Mass at the famous Stephansdom and a procession organized during a Catholic holiday or to visit the Greek Orthodox Church in Vienna.

**Gabriel NOJE**



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